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RADIATION TREATMENT OF HYPERTHYREOIDISM.[1]

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THE radiation treatment of hyperthyreoidism can be carried out in three ways: first by radium, secondly by so-called medium X ray therapy and lastly by deep X ray therapy. Of radium therapy I have had no experience. The so-called medium therapy I have given up using. My intention tonight, therefore, will be to concentrate on deep X ray treatment.

Evolution.

When surgery was a youth, X ray therapy was an infant in arms. Surgery grew rapidly to an adult while X ray was very backward in its progress. The name X ray was the reason. X was the unknown quantity. The earliest treatment by X ray was carried out about 1904. In those days nothing was known about filters, very little about penetration, wave lengths, dosage and so forth, so that some of the early results were disastrous. The neck was often given more X rays than the skin could stand and redness was followed by telangiectasis, atrophy of the skin, dense subcutaneous fibrosis and sometimes an X ray burn and at the same time there was little or no effect on the thyreoid gland. Later on came our knowledge of filters, wave lengths and the penetration value of the rays, together with better designs of Röntgen apparatus and tubes, so that today we can calculate the amount of radiation that will affect the thyreoid and parathyreoid glands without damaging the skin and subcutaneous tissue.

By hyperthyreoidism is meant that pathological degree described by Basedow, Graves, Barry and others. All of the signs may not be present in the same patient. Hyperthyreoidism is not a simple entity localized to changes in the thyreoid gland. It constitutes a disturbance of the endocrine secretions, with consequent far-reaching effects in all parts of the body. Its causes are not confined to the thyreoid itself, but the over-activity of this gland may be the end result of a diseased focus in some other part of the body. To confine treatment to this gland alone may only court failure. Therefore, before any form of treatment is carried out a thorough examination of the patient is essential and every effort is made to eradicate a septic focus whether it be in the teeth, sinuses, bowel or elsewhere.

Ætiology.

The Darling Downs district of Queensland has supplied the greatest number of the patients with hyperthyreoidism who have come for X ray treatment. Next in order come the Northen Tablelands; the remainder have lived in various parts of Queensland and northern New South Wales.

In my series of forty-four patients, thirty-seven were women and seven were men. The average age in the former was between thirty and forty. The youngest was eighteen and the oldest sixty-nine. As regards the men the average age was thirty-five, the youngest twenty-one and the oldest forty-eight. The majority of patients gave an initial history of some infective disease, first and foremost being influenza. Recently several patients have given dengue as the origin of their trouble. One young man who had a severe head injury, showed signs of hyperthyreoidism three months later. In five women signs of hyperthyreoidism have developed after childbirth.

Symptoms.

The most common early symptom is gastro-intestinal disturbance, usually diarrhœa and sometimes vomiting. This is followed by lassitude, early fatigue, nervousness and some form of cardiac distress. Tremor was the initial symptom in one patient. The patient's attention was drawn to his malady in a curious way. His bank doubted his signature to a cheque. In the majority of these cases gradual loss of weight starts very early in the disease.

On inspection the symptoms are usually characteristic, bulging eyes, enlargement of the lower part of the neck and a well-marked blush over the face, neck and upper chest. The hands are clammy and damp, the individual is nervous, excited, starts immediately when a sudden noise is made and speaks with a very rapid, unsteady voice. In fact the patient can be regarded as a really high-strung individual.

The condition in many of the patients who come for radiation treatment, is very far advanced. It is not infrequent to find auricular fibrillation. The thyreoid gland is usually enlarged and palpable, but sometimes it is substernal and not palpable. A radiogram of the chest is useful in this type of case, as it will reveal the enlargement. Tremor and exophthalmos are also present, but as I have mentioned previously, all these signs may not be present in the one patient. In my experience the rapid heart beat was present in every patient except one; this patient had a normal pulse rate of 38 and at my examination it was 52.

Diagnosis.

Correct diagnosis is the ideal. A rapid pulse with a palpable thyreoid does not necessarily mean hyperthyreoidism. Certain types of neurosis may be associated with an enlarged thyreoid which is non-toxic. The patient seeks treatment and may often constitute a difficult thyreoid problem as the result of definite damage following the removal of a portion or the whole thyreoid gland. They present themselves with a slight thyreoid tumour, tachycardia and general nervousness, closely simulating the thyreotoxic syndrome, but a mistaken diagnosis leads to far less harm with Röntgen ray therapy than with surgical operation entailing sacrifice of such valuable tissue of the thyreoid gland; but even loss of gland tissue as the result of Röntgen ray therapy must be avoided.

In the differential diagnosis the determination of the basal metabolic rate is essential. No patient

[1] Read at a meeting of the Queensland Branch of the British Medical Association on October 5, 1928.

should be treated for any length of time unless this is first determined. It is the most valuable guide for the Röntgen therapist. When the rate is below +10 the patient should remain under a physician's care; when it is between +10 and +35 the Röntgen risk is good, but great care must be exercised if it is above +35, as these patients are more liable to get X ray sickness and this complicates the treatment.

To appreciate the value of estimations of the basal metabolic rate one must first understand the course of hyperthyreoidism. Hyperactivity occurs in waves of cycles. One day the symptoms may be exaggerated and the basal metabolic rate will be correspondingly high. Another day the symptoms may be relieved and the basal metabolic rate will often be correspondingly lowered. The basal metabolic rate thus gives a very simple classification of goîtres.

Simple colloidal goître and the simple adenoma are purely surgical conditions. The simple hypertrophic adolescent type of goître is purely a medical problem, but the truly toxic hyperplastic exophthalmic goître and the toxic adenoma are excellent Röntgenological medical problems.

Pathology.

My only reference to pathology is to state that hyperthyreoidism is the disease caused by the thyreoid cells which are normal in numbers but hyperactive. There is no tumour in this type. On the other hand a toxic goître is due to increase in the number of normally active cells, that is hyperplasia of the thyreoid gland. In this type there is a tumour of the thyreoid gland. In either case the indications for treatment depend upon the basal metabolic rate.

Contraindications.

A large tumour showing distinct signs of pressure is really an indication for surgical removal. X rays cause a certain amount of swelling and if the tumour is already showing signs of pressure, the swelling may become increased and possibly cause some added danger, such as interference with respiration, but post-operative radiation in these circumstances is of value.

It has been said that X ray therapy is followed by dense adhesions which increase the difficulties of the surgeon. I shall quote two letters replying to this question, one by Dr. Crile who writes:

> I have frequently operated upon patients who have had long continued treatment and have noted that these patients, if the treatment has been long enough, may have adhesions which are somewhat difficult to dissect. The ordinary case, however, which has had X ray treatment, shows very little change when compared with other glands. As you say, it might also be due to thyreoiditis. A great many of these cases also have hyperplastic glands and these cases, even without any treatment, have been very difficult to dissect out.

Dr. Rogers, of New York City, replied:

> I often have these cases X rayed before and after operation and have never found the operative difficulties increased.(2)

Another objection is that the X rays may cause the opposite condition, increase of hyperthyreoidism. This is a very rare occurrence and I believe it was the cause of the only death which I have had in this series.

Technique for Radiation.

It is impossible to outline a definite technique which can be followed in all cases. Each individual requires special attention. Preliminary rest in bed for about a fortnight beforehand is always advisable and during this time I consider it is a good plan to give Lugol's solution for about ten days. This tends to lower the activity of the thyreoid gland temporarily and it makes the condition more suitable for treatment. I usually give four to five hours' total exposure. This is done in various stages over a period of two to four weeks, according to the condition of the patient. It is advisable sometimes to give one hour's exposure each time; on the other hand, even half an hour may be too much. The rays are generated at 200 kilovolt peak, with four to five milliampères of current, filtered through copper and aluminium.

Effects.

One of the immediate effects may be X ray sickness, which is really a type of acidosis and can very often be controlled by rest in bed and the administration of some alkali and soda-water for a beverage. If necessary, ice packs may be applied to the neck. By adapting dosage this sickness can now usually be avoided. Vomiting and diarrhœa must receive appropriate treatment.

It is always advisable to apply some preparation, such as lead lotion, to the neck after each treatment. This serves a double purpose. In the first place it relieves that burning feeling in the skin of which some patients complain, and secondly it counteracts any possible erythematous reaction in the skin. Erythema, if it should appear, will be seen between ten and twenty days. It is advisable to avoid any skin reaction owing to the possibility of telangiectasis becoming apparent later on, with subsequent disfigurement of the neck.

Dryness of the throat is another common after effect. This is due to the inhibition of the salivary and other secretory glands in the posterior pharynx and portion of the floor of the mouth. The condition usually passes off in about fourteen to twenty-four days and as a rule does not affect the patient any further.

Hoarseness of the voice sometimes follows. Rapid recovery usually occurs, but sometimes the condition is more persistent.

After Treatment.

When the course of radiation is completed, the after treatment must be carefully carried out. Prolonged rest in bed is essential. I have previously mentioned that the condition in the majority of patients seeking radiation therapy was advanced and that auricular fibrillation was not uncommon. The greatest problem is the treatment of the damaged cardiac muscle. Frequently patients return some considerable time after treatment and still show signs of damaged heart muscle, although the thyreotoxic symptoms have cleared up.

Possibly one of the greatest disadvantages of radiation treatment of hyperthyreoidism is the fact that many patients and I am afraid medical men, too, do not appreciate the necessity of prolonged rest. As there has been no cutting of the skin and very few of the consequences which may occur after surgical operation, the patients are liable to continue with their daily routine duties at too early a period. This does not help to restore the cardiac damage. The whole outlook depends very largely on the damage done to the heart muscle. In some cases digitalis is of benefit, but I do not consider it should be persisted with if its effects do not soon become apparent. Some medical men persist with Lugol's solution after the treatment. Some of the patients in this series who were not benefited, had a prolonged course of Lugol's solution after treatment.

In this series of forty-four patients the average duration of the illness was two and a half years. Eleven years was the longest. This patient, a male, had already had partial thyreoidectomy performed three times. The next was a female whose initial symptoms began nine years ago. She also had partial thyreoidectomy done twice. The shortest duration was six months. In four there had been a previous operation on the thyreoid, including the two just mentioned.

As regards symptoms every patient had an increased pulse rate.

Auricular fibrillation was present in 25 = 57%
The thyreoid itself was enlarged in 32 = 73%
Tremor was present in .. .. .. 30 = 68%
Exophthalmos was present in .. .. 28 = 64%

The estimation of the basal metabolic rate was carried out in the last twenty patients of this series. Previously we had no means of having it determined in Brisbane.

The highest basal metabolic rate was 91% and the lowest 10%. The average was 33%.

Results.

The results of deep X ray therapy are as follows:

Apparent cures from two to five years' duration	18 or 41%
Definite improvement, but heart not quite normal	13 or 30%
Of no value in	7
Unknown in	5
Death in	1

In the patients who were apparently cured, all symptoms have cleared up except in four who still have a small degree of exophthalmos, but they have returned to their previous occupation and show no other evidence of the disease.

Of the thirteen in whom there has been definite improvement, the cardiac condition is not quite normal. In most of these patients there was a considerable degree of auricular fibrillation, often of two or three years' standing. As sufficient time has not yet elapsed, I am hopeful that they will completely recover.

Of the seven patients on whom it was of no value, the surgeon operated on the goître on one ten weeks after treatment. This was a rather neurotic type of woman and I think the surgeon's hand was forced by her relatives. In another case the patient had been suffering from hyperthyreoidism for over three years and was really *in extremis* when treated by X rays. Two weeks after completion of the treatment her pulse rate had dropped from 180 to 120 and she died three months later from an intercurrent infection. In the remaining five the condition remains unchanged. One is a girl, aged twenty-four years, who has active pulmonary tuberculosis and a tuberculous knee joint.

I have lost sight of five patients. One death occurred during the course of the treatment. This patient was a girl aged seventeen years who showed early signs of hyperthyreoidism seven months previously. Her pulse rate was 120 and the beat was irregular. After the first dose of X rays had been given, there was no reaction of any kind. Four days later a second dose was given and intense Röntgen sickness followed within twenty-four hours. The patient did not recover and died five days later from cardiac failure. I think this patient was probably subjected to the effect of X rays on the crest of the thyreotoxic wave.

The results have been very good considering that the condition in so many of the patients was very far advanced before any X ray treatment was given. They show 71% restored to useful life, 41% being completely relieved and the other 30% so much improved that they have been able to return to their previous occupations. This compares favourably with the results of Barclay and Fellows[2] who state that 70% of their series were restored to useful life.

Up to the present I have not seen any disfigurement of the skin of the neck; some of the patients were treated over five years ago.

An interesting point for further investigation is that patients with hyperthyreoidism from the Darling Downs district are most suitable for X ray treatment.

References.

(1) Rogers: *American Journal of Roentgenology*, June, 1928.
(2) A. E. Barclay and F. M. Fellows: "Hyperthyroidism Treated by X rays: Record of 300 Private Cases," *British Journal of Radiology*, July, 1927, page 252.

BASAL METABOLISM: A CLINICAL STUDY.

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THE observations embodied in the following paper are those gleaned during eighteen months' association with the clinic of Dr. H. Gardiner Hill in the Medical Unit of St. Thomas's Hospital, London, and during the past six years at the Walter and Eliza Hall Institute, Melbourne Hospital. The

actual material presented is based on one thousand and ten personally conducted metabolic tests on 263 subjects in private practice and 410 at the hospital, during the latter period.

Method.

The Douglas bag, the Haldane gas analysis apparatus, the Du Bois surface area chart and standards of normality were used throughout. All tests were carried out over ten minute periods between the hours of 9 and 11 a.m. following upon half an hour's recumbency on the back devoid of voluntary movement. No food or drink other than water was given to the patient during the preceding twelve to fifteen hours.

Samples for analysis were withdrawn within half an hour of collection to forestall the inevitable slow diffusion of gases through even the best constructed bags.

This method was found to be convenient for application to scattered cases. The margin of error in the laboratory procedure is trivial compared with the larger variations introduced by individual peculiarities and by the influence of certain extraneous factors which even extensive experience can only partially discount.

A great bugbear of operators in this field is overbreathing induced by the unfamiliar conditions of the test. Apart from calling into play accessory muscles of respiration, this washes out alveolar carbon dioxide and upsets the normal balance of the respiratory exchange, rendering the latter a false indicator of the existing metabolism. Further, a considerable time is taken for the respiratory balance to become reestablished. Hence the procedure adopted in some quarters of allowing the patient to breathe with the apparatus adjusted for a number of minutes until the breathing settles down and then switching on for the directly succeeding period, is open to serious objection and tends to furnish low results. The same objection applies to the practice of "giving the patient a breather" for a few minutes half-way through the collection of a sample. The ideal to be aimed at is the unbroken maintenance before, during and after the test of a uniform rate and depth of respiration. These patients received preliminary reassurance together with explanation and familiarization with the procedure. After adjustment of the apparatus, the patients were persevered with until able to conform satisfactorily to requirements, but should any restlessness or respiratory irregularity have occurred that was not almost immediately controlled by persuasion, all apparatus was removed and the actual determination postponed over a further minimum rest period of thirty minutes. A practical disadvantage of the Douglas bag method, as compared with those giving a graphic record throughout the test, is the fact that even with the closest observation it is not always possible to be sure whether or not overbreathing has taken place until the analysis has been made and the patient released from the necessary restrictions. Then as an indication reliance has been placed principally upon the degree of dilution of the gases in the bag —where the oxygen content approached 18% or the carbon dioxide was below 3%, the result has been discarded. Mere increase in the total volume is a necessary corollary of the high metabolic rates met with in disease; while unusually high respiratory quotients have not been a constant accompaniment of overbreathing and may to a great extent depend upon as yet imperfectly understood factors, for example, the relative proportions of fat and glycogen in process of metabolism at the time.

Normal Metabolism.

Set out in Table I are figures obtained at the first determination from sixty-two apparent normals; those in Group III having been taken out under the same conditions and by the same method in England.[1] Group I is composed of third year medical students, Groups II and III mostly of persons admitted to hospital for the correction of minor uncomplicated surgical disabilities.

The results of this somewhat limited investigation support certain impressions already formed during clinical work.

(*a*) The American Du Bois standards may be adopted in Victoria for ordinary individuals (Group II above) with acceptance of "±0%" as the absolute theoretic normal.

(*b*) While the subjects of Group II were maintained in hospital beds overnight, those of Group I travelled from their homes and no restriction within reason was placed upon their activities until the preliminary rest period was entered on. That results in either case may be accepted as on an equal footing is widely supported.[2][3]

It is preferable on the whole to carry out the tests on the patients in bed in their own homes, thus avoiding the anxiety engendered by admittance to hospital or the unfamiliar atmosphere of a consulting room.

(*c*) In this country the metabolism appears to be on a somewhat lower plane than that obtaining in London. Our *minus* readings in England were sufficiently infrequent to be regarded as of possible significance.

TABLE I.

Group.	Subjects.	Location.	Number of Cases.	Age.	Sex.	B.M.R. Range.	B.M.R. Average.	True R.Q. Average.
I	Students	Melbourne	18	20 to 25	M. 15 F. 3	−16·4% to +8·3%	−6·5%	0·82
II	Lay	Melbourne	32	18 to 75	M. 17 F. 15	−11% to +11·6%	+1·7%	0·8
III	Lay	London	12	13 to 44	M. 9 F. 3	+3·6% to +13·5%	+8·6%	—

Generally speaking relatively lower metabolism in tropical countries has been reported by numerous observers and this trend is supported by the work of Miss Hindmarsh[4] in Professor Chapman's laboratory in Sydney. As evidence on the whole supports the statement that reasonable variations in season or temperature are without appreciable influence, it would seem that a national level of metabolism arises after prolonged sojourn as a gradual adaptation to a specific climatic environment.

(*d*) It has been a personal experience and that of other workers[5] in this field that efforts to estimate the metabolism of our colleagues have been productive of low results, often surprisingly so. This is to some extent instanced in Group I. There can be little doubt that to the mind trained in physiology a conception arises, largely due to the retention of that unfortunate word "basal" which results in a special voluntary effort being made to attain complete muscle relaxation and limitation of respiration. In tests taken over a ten minute period this effort meets with an appreciable but variable measure of success that is proportional to the conscientiousness, intelligence and self control of the subject. It doubtless accounts for the greater range as well as the lower level of metabolism obtained with the eighteen students than with the thirty-two lay subjects. The eminent desirability of substituting Krogh's term "standard metabolism" for "basal metabolism" in common use is apparent. No hard and fast level exists anywhere. If the qualifying adjective basal is taken to imply "the minimum consistent with life," it suggests that existing just before death from an exhausting illness, hæmorrhage or starvation. Even "the lowest limit compatible with normal tissue activity" is unobtainable experimentally. The standard procedure adopted here comprises that already set out with instruction to the patient to remain at comfortable rest continuing to breathe throughout the test in the same quiet natural way as if nothing unusual were occurring. While any tendency in the reverse direction is firmly corrected, no encouragement whatever is given for concentration on voluntary suppression of any description. It is held that such standard requirements admit of least individual variations and constitute the most stable basis clinically practicable upon which to assess the variations of disease.

Interpretation of Results.

In its general application basal metabolism, like many other procedures accessory to clinical medicine, has been of great value in moulding our outlook upon certain conditions which it has compelled us to view from a physiological aspect; but it shares with such procedures a liability to mislead when applied to the individual case, unless great care is exercised in its interpretation.

Its practical application to clinical medicine is chiefly, and in the writer's view solely, concerned with the measurement of the thyroxin content of the tissues. But other influencing conditions (compare Table II) must be excluded or taken into account and some of these require amplification.

TABLE II.

Raised Metabolism.	Lower Metabolism.
Adrenalinæmia (temporary).	Addison's disease (most cases).
Hyperpituitarism (for example, acromegaly active stage).	Hypopituitarism (for example, Frölich's syndrome, acromegaly exhaustive stage).
Diabetes—untreated.	Diabetes—on restricted dietary.
Fever.	Under-nutrition.
Primary blood diseases (active stages).	Gross anæmic and asthenic states
Cardiac failure.	
Pregnancy (from fourth month) [6].	

Clinical experience supports the findings of Boothby and Sandiford[7] which go to show that rapidity of heart action *per se* does not very materially raise metabolism. At a single clinical determination basal metabolic rates were above + 15% in only three of their 99 cases of cardiac neurosis. This term may be held to include a large group of clinical cases (referred to again later) in which it is very important yet very difficult to obtain ideal metabolic readings. The patients are just those likely to exhibit nervous tension or a panicky sympathetic response under what is to them the great psychological stress of an actually simple procedure. Metabolism may in this way be temporarily raised, probably through a flooding of the circulation with adrenalin. This type of patient has been shown to exhibit a more sensitive response to injections of adrenalin experimentally.[8]

Peabody, Meyer and Du Bois[9] after careful study of 916 patients by both direct and indirect colorimetry conclude that metabolism is not elevated by compensated cardiac lesions. On the other hand nine out of their twelve patients with dyspnœa showed a distinct rise. In fact the manifestations of cardiac failure, especially the hyperpnœa, prevent the patient from conforming entirely to the requirements of the test. And it is just as impracticable to apply clinical metabolism to any subject who is unable to recline in comfort at complete rest without dyspnœa for upwards of half an hour, as it is to one whose temperature is above normal.

Œdema of any type is relatively inert from a metabolic point of view, yet it must tend to lower readings by increasing the weight and estimated surface area of the individual.

Minor limb movements during the preliminary rest period are probably negligible and in any case it is questionable whether a severely enforced immobility is not productive of an undesirable tension both in mind and muscle. Du Bois refers to studies of tremor by Graefe[10] who found that metabolism exceeded the normal limits only if the tremor were very pronounced.

Numerous investigators, especially with professional fasters, have demonstrated a steady decline of metabolism in response to under-nutrition. When not fully comprehended, this influence has been allowed to mislead in clinical interpretation. For example, if we take twelve to fifteen hours as our post-absorptive standard, we should require the patient to have been on an average diet until the

commencement of this period and certainly make sure that there has been no considerable dietary restriction on medical, personal, hysterical or other grounds. Vomiting, diarrhœa, conditions interfering with food assimilation and the like are potent indirect causes of under-nutrition and in this series patients, for example, with exophthalmic goître, undoubtedly active, have registered an apparently normal metabolism following gastro-intestinal crises.

Though no authoritative experiments have come under notice in this connexion, some allowance would seem warranted for prolonged rest in bed. In a normal individual under these conditions the tendency must be for the gradual adjustment to a lower and more economical metabolic level. The metabolism in exophthalmic goître as a rule drops considerably over the first week or two of rest in bed, consequent upon removal from the physical and mental stimuli of everyday life. If it fails to drop in this period or even to less extent later, the condition may be regarded at the time as progressive. It must be remembered also that, especially under conditions of rest and isolation, the metabolism, with or without iodine, may return completely to normal while the diseases remains, at all events potentially, still present.

It is perhaps only to be expected that metabolism will be lowered by long exhausting illness of any nature, but from time to time individuals have been encountered with surprisingly low rates and no obvious cause for such functional depression. Plummer[11] has remarked "there is a large group of persons, many of whom are of the asthenic type, whose basal metabolism ranges from the average normal to 25% below." The response to thyreoid therapy in the writer's experience, has been so disappointing on the whole that it seems hardly possible, together with the absence of any special clinical stigmata, to regard them as essentially hypothyreoidic.

Before proceeding to a classification of the material in hand it may be well to specify the meaning accepted therein for certain useful if not entirely satisfactory terms in common use.

Hyperthyreoidism has been applied to the state that results from a purely quantitative excess of thyroxin in the tissues and hypothyreoidism to the reverse of this. Dysthyreoidism has been used to indicate the state that results from a qualitative alteration in the secretory output of the thyreoid gland and thyreotoxicosis to include hyperthyreoidism and dysthyreoidism either singly or in any proportionate combination.

It would appear that intelligent interpretation of basal metabolism in its relationship to thyreoid disorders gives us only a fairly accurate measure of the purely quantitative alterations in the secretory output of the gland. There are recognizable clinically syndromes that can be exactly imitated on the one hand by overdosing with thyroxin and on the other by complete extirpation of the thyreoid gland and presumably, therefore, each is dependent upon a purely quantitative factor. Also encountered are syndromes apparently attributable to thyreoid secretory abnormality which cannot be entirely reproduced by such measures and to account for which it seems feasible to postulate dysthyreoidism. We may possibly go a step further and assume that the elements of hyperthyreoidism and dysthyreoidism may vary in their relative proportions in different cases or in the same case during its course. If basal metabolism deals only with the quantitative element, explanation on the basis of a pure dysthyreoidism is afforded for the occasional anomalous cases in which thyreoidectomy in the face of a normal figure has proven of general benefit to the patient. For without being able to point to any convincing cases among this fairly large series, the impression remains that it is possible for the thyreoid gland to be exerting a baneful secretory influence upon the body, especially on the cardio-vascular system, without elevating metabolism and that normal findings in this latter respect should not necessarily be a contraindication to operation. This aspect has a special application to that important group of cases in which cardio-vascular manifestations are predominant, the underlying thyreoid ætiology of which may escape detection—cases conveniently referred to by Elliott[12] and others as "thyrocardiac." Levine and Sturgis[13] reported on five patients none of whom had any characteristic eye signs and only one a detectable enlargement of the thyreoid gland. All five were subject to paroxysmal auricular fibrillation which they regard as a feature that should at least arouse suspicion of thyreoid ætiology. They comment on the restless demeanour and animated facies of these patients as contrasted with the apathetic appearance of the subjects of other forms of heart disease.

Great difficulty is sometimes presented when a patient over the age of thirty with a goître developes a progressive cardiac defect for which no other ætiological factor is discoverable and which is unaccompanied by persistent elevation of metabolism or unmistakable manifestations of the thyreotoxic state. This has long constituted a problem that is further complicated in practice by the tendency for heart failure or high blood pressure alone to raise metabolism slightly.[14][15] In the subjects reviewed in this paper normal metabolism has usually been allowed to preclude operation and leave the question unsolved. If the goître is responsible, its action is presumably secretory in nature, that is a pure dysthyreoidism; as any local reflex sympathetic process would scarcely result in gross pathological changes in the cardio-vascular system.

Thyreotoxicosis.

In the category of thyreotoxicosis are 213 persons in regard to whom the diagnosis was definitely established. Nine patients presenting in sequence with them are excluded as no metabolic estimation was practicable—on the score of cardiac failure in six and mental incapacity in three.

During the progress of work, in an effort to follow Plummer's teaching strictly, they were allocated as follows: Exophthalmic goître 162, toxic adenoma 19

TABLE III.

Condition.	Average Age coming under Observation.	Average B.M.R. Before Treatment.	High B.P. (Exceeding 160/80).	Cardiac Involvement.	Goître Present Before Symptoms.	Average B.P. (67 Cases).
Toxic Adenoma (19 Cases)	41	+30%	21%	53%	4 to 40 years (average 18 years)	—
Exophthalmic Goître (162 cases) ..	34	+43%	71%	44%	—	S 138; D. 78; Pulse Pressure 60.

and unclassified 32. However, it seems nowadays less essential to make this classification than was formerly thought, for it has become widely recognized that the two types often merge indistinguishably into each other and that once hyperthyreoidism has ensued, the cautious use of iodine can do little harm and may prove beneficial where earlier teaching would have held it contraindicated. Nevertheless there would still appear to be good clinical grounds for recognition of the toxic adenoma type, with its insidious onset, essentially harmful influence upon the cardio-vascular system in particular, inherently progressive course, lack of response to X ray therapy and preeminent suitability for surgical treatment. A few comparative findings are presented in Table III.

Whether coincidentally or not, thyreotoxicosis arose in three of the patients shortly after the administration of iodine for the treatment of an apparently non-toxic goître.

Iodine therapy chiefly in the form of Lugol's solution was utilized before operation for 85 of these patients; with obvious clinical benefit in 54, apparent aggravation of the condition in six and no appreciable effect in the remaining 25. It so happened that benefit was derived from the iodine in three out of four persons whose condition was classed clinically as toxic adenoma.

By cautious and continuous administration in small doses, iodine exercised very considerable if not complete control in two patients observed for twelve months and in six others for periods between two and nine months. Of the 54 patients who responded initially to Lugol's solution, four relapsed suddenly while still taking it after periods of two, three, twelve and thirteen weeks respectively. The inconsistent nature of the response to iodine clearly renders it advisable to maintain patients under reasonably close observation during its administration.

Periorbital œdema, especially involving the upper eyelid in cases of exophthalmic goître, has been a fairly common feature and one that is seldom commented upon. In three patients it was far more in evidence than the exophthalmos.

Classical gastro-intestinal crises occurred during the course of six cases, being fatal in two; one before the introduction of and one in spite of iodine therapy.

During the course of this disease there is very apt to be an interference with the factors maintaining the balance of body weight that is productive at times of apparently anomalous results. Three of the frank exophthalmic goître patients were decidedly gaining weight in the early active stages before any treatment whatever had been instituted, while after iodine therapy or partial thyreoidectomy many of them increased in weight, although remaining in some degree still definitely thyreotoxic.

Generally speaking the basal metabolic rate and the "basal" pulse rate run parallel; but emphasizing that this is not always so, were five persons with metabolic rates over +30% associated with pulse rates of 80 or under. Instances in which rapid heart action is associated with normal or low metabolism are more numerous and on the whole the pulse rate and more especially the body weight are not infallible guides to progress.

Glycosuria was present in eight cases; in seven of these a blood sugar curve was obtained and hyperglycæmia was noted in all. It is not always possible to say whether this state is merely secondary to the thyreotoxicosis or is indicative of coexistent diabetes. There is probably in all a tolerance defect of some degree that in its milder forms is made evident only by the thyreotoxicosis. Two patients were known to have been diabetic for some time prior to the onset of exophthalmic goître and one who required fairly large doses of "Insulin," submitted to thyreoidectomy and was thereafter adequately controlled by dietary measures alone. Only one of the others was investigated after complete operative treatment and he was found to have almost completely recovered normal carbohydrate tolerance. This whole subject is discussed at length by Wilder[16] and by Joslin and Lahey.[17] The former regards the hyperglycæmia as being accessory purely to the high rate of metabolism and not due to any thyreoid action antagonistic to the pancreas or to "Insulin"; while the latter observers, admitting that hyperthyreoidism alone is the determining factor, support a certain relationship between the pancreas and thyreoid through the glycogen storage.

The assessment of cardiac involvement in 93 (46%), including auricular fibrillation in 14, is of necessity somewhat arbitrary. As a criterion, purely clinical evidence of enlargement, pathological irregularity or failure had often to be accepted, the frequent occurrence of systolic murmurs alone being of course ignored. It has been customary with most physicians to utilize digitalis preoperatively until the maximum benefit has been obtained in all cases of cardiac decompensation dependent upon a thyreotoxicosis and this would seem to have been justified by results. It is in consequence somewhat confusing to have warnings issued against its use

by Plummer[11] and by Pemberton,[18] no specific reasons being given other than the assertion with special reference to the toxic adenoma type, that operative mortality has materially lessened since preoperative digitalization was abandoned.

It is difficult to escape the impression that our cases of thyreotoxicosis in Australia differ somewhat in type and severity from those met with elsewhere, notably in parts of America. A survey of the literature suggests that they have a greater proportion of fulminating cases, characteristic gastro-intestinal crises and iodine hyperthyreoidism are more common than with us and the response to iodine therapy apparently more consistent and dramatic. Metabolic rates in excess of +100% are of frequent occurrence, whereas only one occurred in this series and the next highest was +85%. Sydney observers[19] appear to share our difficulties in strict classification along the lines of Plummer and a similar view was personally expressed by Professor Fraser, of London.

Operation.

One hundred and seventy-seven operations were performed upon 130 patients, six of whom died within four days; one died during the progress of operation, one from broncho-pneumonia and four, all since the introduction of iodine therapy, from so-called post-operative hyperthyreoid crisis.

Tetany ensued in two patients and passed off under treatment with parathyreoid and calcium, but one returned ten months later and died in a tetanic convulsion.

Vocal cord paralysis was observed in twelve patients, five of whom passed from observation. Of the remaining seven, two suffered from temporary paralysis and recovered in a few weeks and in five the paralysis remained permanent. Of these latter three had bilateral paralysis and two died from adductor spasm; the autopsy revealed severance of both recurrent laryngeal nerves in one and in the other an obscure hypertrophic neuritis without any obvious trauma.

Five patients reported later with post-operative thyreoid deficiency one with the clinical picture of myxœdema and four with low basal metabolism and suggestive symptoms which responded to thyreoid gland administration.

It does not appear that low metabolism alone after thyreoidectomy is necessarily indicative of hypothyreoidism; six other patients gave readings ranging from −10% to −19% within a few weeks of operation apparently as a reaction phenomenon coupled with prolonged rest in bed and a limited food intake. Nothing unusual was disclosed in their subsequent course.

Apart from gross cardiac failure, prognosis, especially operative, appears to have been more unfavourably influenced by the presence of psychic and mental changes than by any other factor, high metabolism included. When psychosis is associated with fever, the outlook is held to be particularly poor.[20]

However sound his judgement, no surgeon can be expected in many cases to remove what will ultimately prove to have been an ideal amount of the gland; but if no appreciable added risk to the patient is entailed, erring on the side of too free removal is more simply corrected later and affords surer and more rapid relief from the harmful thyreotoxic state. And in patients that return after two or more thyreoidectomy operations with a recurrence of symptoms and considerable re-enlargement of the gland remnant, complete extirpation of all discoverable thyreoid tissue seems to be almost justifiable.

Some of these subjects with even advanced cardiac damage have made such remarkable degrees of recovery following operation that a modern trend of thought is well expressed in Mr. Devine's[21] words: ". . . no matter how bad the visceral changes in patients with old standing exophthalmic goître, the question of surgical operation should at least be considered."

X Ray Therapy.

Only 26 of the exophthalmic goître patients were subjected to X rays and as even they came under observation on no uniform plan, no authoritative statements are warranted. Making due allowance for the spontaneous recoveries and fluctuations of the disease, some patients undoubtedly responded; though beyond specifying those with early lesions as more suitable, it was not possible to anticipate which would do so. Subjective improvement occurred frequently after the first application, at all events before there was any alteration in pulse rate or basal metabolism and though this may have been entirely psychic, it contributed in a measure to the patients' comfort and well being. A few patients, apparently little controlled in the early stages, after persisting with treatment, suddenly dropped to normal and tended to remain so.

To say the least X ray therapy is indicated in patients who firmly decline operation or who have permanent recurrent laryngeal nerve damage.

Finally in regard to this thyreotoxic group a comparatively accurate assessment of the basal metabolism can usually be made on clinical grounds and its actual estimation is superfluous. The test, however, affords a useful check on the progress of patients undergoing a lengthy form of treatment and a series of estimations for comparative purposes on the same person is not complicated by differences in metabolism peculiar to each individual. Again, with careful interpretation, it will sometimes afford comforting support of clinical judgement in doubtful cases. This includes post-operative and so-called "burnt out" exophthalmic goître in both of which the clinical picture is sometimes confusing, certain features such as tachycardia, dyspnœa, tremor and exophthalmos being purely residual and dependent upon structural damage already done rather than upon an existing hyperthyreoidism. On the other hand benefit is frequently derived from the empirical use of iodine

or thyreoid extract or both in doses so small as to be negligible as regards their influence on metabolism.

Conditions Simulating Thyreotoxicosis.

It has become evident that when a genuine doubt exists in the mind of the average clinician as to the presence of thyreotoxicosis, in far the greater proportion of cases it is not present. In this category, in which there was eventually disclosed no evidence of thyreotoxicosis, 210 patients were placed; 84 of them had definite clinical enlargement of the thyreoid gland, while in 31 others it was unusually palpable.

Occasionally misleading have been the weakness, wasting, tachycardia, tremulousness, sweating *et cetera* of tuberculosis and other toxæmic states or even diabetes; but an overwhelming majority of these patients belongs to that class of whom Boothby[22] wrote:

> It is obvious that a sharp distinction can be drawn between mild cases of exophthalmic goitre, and those conditions known as "effort syndrome," "disordered action of the heart," "cardiac neurosis," "nervous instability," "neuro-circulatory asthenia" or "neurasthenia" which on superficial examination present some of the signs and symptoms of mild exophthalmic goitre, but in which the basal metabolic rate is normal and which on close analysis can be shown not to be dependent on an excess in the body of the thyroid hormone.

Clarity is lacking in our conception of this whole group possessed of autonomic nervous systems too highly sensitized and too easily exhausted by various stimuli.

Kessel Hyman and Lande[23] reported 86 cases to which the term autonomic imbalance was applied. They are held to be closely allied to and differentiated by the basal metabolic rate only from exophthalmic goître, having among other features enlargement of the thyreoid gland, prominent eyes and positive von Graefe's sign frequently present. While recognizing that some clinical difference exists, they confess elsewhere that attempts to express this difference in words have failed.

Finally, there must be included that ill-defined group referred to as "goîtrous tachycardia," to quote Scott Williamson:[24]

> It is well to insist that the tachycardia that arises in many forms of chronic goitre (e.g., interstitial thyroiditis) is not necessarily the result of thyrointoxication nor is the anxiety and agitation secondary to the tachycardia at all related to the psychosis and tremor of true thyrotoxicosis. The workers of the Mayo clinic emphasize this fact and seek an explanation in some form of irritation of the sympathetic nervous system etc.

Sir James Berry[25] has referred to the frequent association of simple goître with tachycardia, remarking that he had often removed adenomata, cysts and other tumours from these patients with much benefit, although no pathological evidence of activity was found in the gland. Tachycardia was at times present along with clinical stigmata of thyreoid deficiency and for this he could see no other explanation than the assumption of a dysthyreoidism.

Hamilton and Lahey[26] have drawn up a table (Table IV) setting out the diagnostic features of these cases under discussion.

TABLE IV.

1. *Neurasthenic States.*	2. *Hyperthyreoidismè*	3. *Heart Disease.*
(*a*) Fatigue.	(*a*) Goître.	(*a*) Enlargement.
(*b*) Breathlessness.	(*b*) Eye signs.	(*b*) Diastolic murmurs.
(*c*) Giddiness.	(*c*) High basal metabolism.	(*c*) Primary disorders of the heart beat.
(*d*) Palpitation.	(*d*) Female preponderance.	(*d*) True signs of heart failure.
(*e*) Tachycardia.		
(*f*) Tremor.		
(*g*) Heart pain.		
(*h*) Vasomotor disturbances: (1) Cyanosis. (2) Sweating. (3) Dermographia.		
(*i*) Emotional disturbances.		
(*j*) Gastro-intestinal disturbances.		

Column 1 contains the symptoms common to all three and Columns 2 and 3 the manifestations peculiar to their respective headings. A carefully checked basal metabolic reading is to some extent a guide, but no other feature in Columns 2 and 3 except perhaps gross exophthalmos, is diagnostic and this serves only to emphasize that in doubtful cases the diagnosis depends upon the requisite clinical acumen to appreciate subtle differences difficult to define, in the features under Column 1.

Even when no mechanical cause for it is demonstrable, any form of goître appears to be a reflex excitant in many patients of various vague throat sensations—they complain of tightness, pressure, constriction, fullness, alteration in voice or interference with the act of swallowing. The greater the basis of neurosis, the greater seems the liability to these.

The demeanour of patients with true thyreotoxicosis has impressed itself upon many observers—manifest agitation and stress is so often accompanied by every effort to remain outwardly composed and their periodical failures to carry out some physical test or to control the emotions provoke only shame and efforts at concealment. It is noticeable that in the requirements of the basal metabolism test these patients make an honest endeavour to cooperate thoroughly in contradistinction to many subjects of neurosis who may be actually or potentially resistive to the procedure and whose weaknesses in every direction are so readily recounted.

It is now generally established that thyroxin, given intravenously, requires ten to twelve days to attain its maximum effect; so that daily fluctuations of any extent in a patient's condition may be of an adrenalin-sympathetic nature, but are probably not thyreotoxic. This applies particularly to those who are "up and down" or "nervy" almost from day to day. Nevertheless one patient whose symptoms were completely remittent every three or four days and who had a normal metabolism during remission has remained for some months apparently cured by thyreoidectomy.

The subjects of purely nervous disability have as a rule cold clammy extremities in contradis-

tinction to the warm moist hands and tendency to discard clothing by day or night usual to those with thyreoid overaction. The actual determination of metabolism necessitates the so-called "basal" requirements including an atmosphere of untrammelled resignation to the process and to the presence of the investigator and this affords the latter opportunity for quiet clinical observations and the obtaining of a basal pulse rate. Under these circumstances a pulse rate in the seventies may be obtained in a case in which an apparent tachycardia has been the great stumbling block. If this is so, it is very unlikely that the cause is thyreotoxicity the tachycardia of which is more uniformly present. Also it serves to stress the help afforded by patient handling of these people.

In the whole group just discussed it should be possible to obtain a basal metabolic rate within normal limits in all. The estimations call for special care and if found to be slightly above normal, should not be acted upon without confirmatory repetition of the test.

Myxœdema.

Under the heading of myxœdema are included 23 patients whose condition was easily recognizable clinically and was confirmed by basal metabolic rates ranging from −14% to −43% and by their subsequent response to the administration of thyreoid extract.

In nine out of fourteen patients in which the information was obtainable, the correct diagnosis was not made by one or more medical men initially consulted. Two had been labelled as suffering from anæmia, two from pernicious anæmia, two from chronic nephritis, two from neurasthenia and one from post-encephalitic Parkinsonianism. The fact then remains that this striking and eminently remediable condition continues to escape detection, despite repeated warnings from clinics and published papers. In most cases this is not due to lack of knowledge, but to lack of thought and observation. There is good reason to feel that the powers of observation are not sufficiently encouraged in teaching. Students who are capable of giving good dissertations on subjects in the abstract, often fail, when confronted with patients, to comment for example on such features as slight jaundice, œdema, exophthalmos, pigmentation, facial asymmetry or mild Parkinsonianism. Again text book descriptions often fail to convey the relative incidence or significance of manifestations. In myxœdema all patients are not obese and the solid œdema, generalized or in localized pads, is not invariably well marked, even in advanced cases. While these patients are speaking, the mental and physical sluggishness, especially the slow "leathery" articulation (mouthing of words) often accompanied by a deepening and hoarseness of the voice, is more readily revealed and emphasizes that as a rule the diagnosis is suspected from observation but established by conversation. Somewhat analogous to the secondary changes in continued hyperthyreoidism are the progressively deleterious results on all the tissues of the unrelieved hypothyreoid state. Thus there is often deafness and impaired function of the larynx, while secondary anæmia is practically common to all. Evidence of myocardial damage, including actual heart failure in three, was present in seven patients of this series. Certifiable insanity ensued in one and material damage to the kidneys in three was made evident by albumin and casts in the urine and results from the urea concentration test of under 2%. The fact that laboratory tests may in this way give actual evidence of the impaired renal function has rather added to the diagnostic confusion with chronic nephritis.

Improvement in the functioning of organs following thyreoid therapy is often demonstrable; for example, in one case a urea concentration test figure of 1·25% rose to 3·4% in three weeks and the insane subject recovered and maintained normal mentality from the first week of treatment.

From experience with these cases and on general principles it seems probable that, other things being equal, the extent of permanent damage upon which the ultimate degree of recovery largely depends, is proportional to the length of time the condition has remained untreated. Hence the very real importance of prompt diagnosis.

Meakins and Davies[27] report a patient with myxœdema who was invariably improved in one respect by thyreoid extract, but who was compelled intermittently to suspend it on account of headache and tachycardia and each time relapsed into the myxœdematous state. Many others have referred to this aspect, very noticeable in this series, that some patients, definitely hyperthyreoidic, are more sensitively responsive to its administration than any other type of individual and will not tolerate the dose that seems physiologically requisite. On the other hand there is another familiar group whose myxœdematous state is inadequately controlled by as much as 1·2 grammes (twenty grains) of desiccated thyreoid extract daily. Apart altogether from the relative potency of proprietary preparations, this must depend upon the individual variations in absorption from the alimentary tract and clinical experience teaches that this is temporarily inhibited for example by catarrhal conditions such as the common cold. Further experience in the use of thyroxin would settle this point, if its intravenous administration provokes uniform response in all these types.

One asthmatic subject ceased to have attacks when myxœdema developed and treatment of the latter condition always resulted in return of the asthma. This was in contrast to another patient who suffered from asthma only when her thyreoid extract was suspended.

In the early weeks of treatment, owing to the elimination of the mucinoid deposit, there is as a rule a loss of weight, but this is regained later, doubtless as an expression of greater efficiency and well being. However the less common thin subject with little subcutaneous deposit may gain in weight from the outset, which gain of course is not to be

taken alone as an indication for increased dosage. From what has been said relative to the variability of dosage tolerance, it can be seen that the obtaining of maximum benefit for these patients and their maintenance in an optimum state of health at times call for careful management. Quite a number, as has been noted in other clinics,[5] experienced greater comfort and well being while their basal metabolic rates remained somewhat below the absolute theoretic normal, for example, −5% to −15%. Intelligent patients after a while can regulate their own dosage with precision and seemingly should be encouraged to do so. It is well to impress upon a near relative, as well as upon the patient, that the treatment will probably be lifelong, as some suspend the treatment for a while and in consequence of the mental inertia that ensues become, so to speak, too disinterested to continue. Myxœdematous patients as a rule are neither so acutely introspective nor so alive to their own disabilities as are those with other types of asthenia.

With the possible exception that basal metabolism may be employed to indicate where some patients with doubtful conditions stand, as a means of control this laboratory test is on the whole inferior to sound clinical judgement and in the initial diagnosis of a frank case is little more than academic confirmation. Some helpful guidance may be obtained in those patients, already referred to, who, having suffered in the past from exophthalmic goître and having retained some residual features thereof, have following treatment or with the effluxion of time developed manifestations suggestive of hypothyreoidism.

Endocrine Deficiency.

Seventy-three patients were referred with a query on clinical grounds as to the presence of endocrine deficiency, occasionally in relation to the pituitary gland, but chiefly to the thyreoid. None possessed characteristic clinical stigmata of myxœdema; but in some individuals even persistent thyreoid deficiency does not result in the classical clinical picture. Further there is ample justification for regarding this subthyreoid condition as a distinct and separate entity.[2] [28] [29] [30] [31] [32] The innumerable manifestations attributed to this ætiology and made familiar to us by constant repetition, are beyond recapitulation here. They are doubtless correctly so attributed in some cases; but we have no absolute criterion for the diagnosis of subthyreoidism, unless it be in the response to thyroxin given intravenously. Thyroxin given by mouth is subject to the same vagaries of absorption as the other preparations. The clinical metabolic test as a routine has been insufficiently delicate to record infallibly the small range variation that apparently often exists; although it has proved useful in demonstrating a more recently recognized form of hypothyreoidism which simulates hyperthyreoidism in that the patients are underweight, highly strung and subject to tachycardia.

The basal metabolic rate was below −10% in only 19 of these 73 suspected cases and while for the most part the persons with slightly low rates have responded better than those with normal or slightly raised rates, this has been by no means a constant finding. On the other hand there is some truth in the assertion that only in myxœdema do we aim at purely physiological substitution by thyreoid therapy; in other conditions, notably perhaps arthritis and obesity, effects are toxic and often obtained by maintaining metabolism at an artificially high level. All patients therefore who benefit clinically from treatment with thyreoid substance, have not necessarily suffered from any deficiency in a quantitative sense and in this case no guidance could be expected from metabolic tests. If clinical grounds for suspecting hypothyreoidism are present, there can be no objection to the tentative exhibition of thyreoid treatment, whatever metabolic figure is registered. The literature abounds with warnings of the great dangers attending the wide empirical use of thyreoid extract, yet it must be very seldom that anything beyond temporary discomfort follows its cautious use or trial and even then it is principally in patients actually hypothyreoidic. The opinion is ventured that in this whole group of cases the therapeutic test is safe and simpler, cheaper and surer than resort to the laboratory. The existence of individuals to whom allusion has already been made, possessed of abnormally low metabolism not apparently dependent upon any thyreoid insufficiency, obviously further minimizes the practical value of clinical metabolism in this field. What has been said in relation to the thyreoid gland, applies with even greater force to the pituitary whose influence on metabolism is admittedly less.

Non-Toxic Goitre.

Metabolic estimations were made in twenty cases of non-toxic goître. While the figures lay between ± 0% and + 11% in four, in seven they lay between ± 0% and − 10% and in nine between − 10% and − 20%. This simply bears out the general impression that there is a tendency for this type of goître to be associated with some degree of secretory deficiency, either as a determining factor in the enlargement of the gland or as a factor secondary, more particularly in endemic forms, to its impaired function. Also the rationale of administering thyreoid extract is further borne out.

Blood Diseases.

There were referred for estimations two patients with *polycythæmia vera* with basal metabolic rates of + 40% and + 14% and two with myelogenous leuchæmia under treatment by X rays and benzol, one with a blood picture restored to normal having a rate of − 8% and the other partially controlled with a rate of + 18%. Although of no clinical value, elevated metabolism has been a fairly uniform finding in active stages of these conditions.[33]

Conclusion.

It is not found possible to indicate concisely the application of basal metabolism in clinical medicine. Certain it is that in carrying out the test in person its bearing on each individual patient is seen in a perspective that a bare figure furnished by a laboratory worker can never give.

In the writer's practice its use is confined to the hyperthyreoid state, the diagnosis with reservations of a few doubtful cases and as a check upon the progress of established cases over a lengthy period.

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WILSON'S PROMONTORY.[1]

By FRED D. BIRD,
Melbourne.

"IF these be true spies, which I wear in my head this is a goodly sight." A goodly sight for me to see so many old friends assembled to hear me prattle about a walking tour which was undertaken half a hundred years ago, and to see the pressed flowers from a columbarium in an old man's memory. Alas, I am old, having passed the statutory limit of three score and ten, so sir, if you wish, you can call me a septuagenarian, but I hope you won't. I mislike the word and besides I am a very young one yet. Septuagenarianismus is a disease of which a very large majority of those who have it die; but a few get over it, by acquiring an even more fatal complaint, octogenarianismus. How anciently old are our modern therapeutic measures, but I won't burthen your remembrance with a heaviness to come, another decade.

How horrible words hover over the mere mention of these fell failures of health. Ugh, decayed, indeed. Rather let me speak of something, wholesome and beautiful, a double word I met recently for the first time.

A Roman nobleman in early imperial times having bought a property in the Sabine Hills, took a friend with him to help him choose the site for the house. They sought their *amœnitas*, their

[1] Read at a meeting of the Melbourne Medical Association on September 20, 1928.

pleasantness in the humanized landscape in front of them, framed by the billowy blue of the Campagna, caring not for the grey gauntness of the limestone Appenines behind them. The difficult air of the summit was not for them, the Romantic was not yet, but the Apposite was. The friend said: "That level patch in front of where the house is to be, is *cedro-dignus*" worthy of a cedar. Double words like me not, but surely this has a wedded worthiness which wins our affectionate admiration.

Now my tiny tale, my *fabula*, is to me *memoria-digna*, worthy of a memory, and I think it will be to you when I tell you that my companion was a great Australian, Harry Brookes Allen. At this time he was recently qualified and I was still floundering among the "ologies" of the third year. We had achieved several walking trips together and had plunged into the depths of friendship far enough to enjoy each other's want of conversation, like to monks in Egypt in early Christian centuries. Harry had a fine tenor voice and a knowledge of German ballads, that in dull stages often shortened our miles and extended our happiness.

We were always as happy as the great Mogul—wasn't.

I have had the brazenry to put the recital of this walk into the form of an essay, which I fear Samuel Johnson would not admit was even a "loose sally of mind." Here it is:

It was in 1879 that my chum and I essayed to go to Wilson's Promontory, that bit of strayed Tasmania. We knew very little about it, except that it was promontorial and therefore probably picturesque and that it rejoiced in a lighthouse at its tip, which tip would undoubtedly have been called Cape St. Elias if it had beaked into the Ægean Sea instead of into the Southern Ocean—that Elias, which scoffers say is but Helios the Sun God, who touches with light any terminal tongues of land within his vision.

We walked to Schnapper Point and then to Flinders, not yet risen into the golfing firmament. Thence went we by boat to Cowes, with an ornithological peep at Cape Wollomai. We meant to return to our mutton birds on the way back, but circumstances to be detailed later were against us. Then to Griffiths Point, as yet unitalianized into San Remo. A long day during which we lost our way, a lapse a little serious as human beings were almost as rare as dodoes in these parts, took us to Anderson's Inlet, where we gave ourselves a day of rest and much fishing. Such whiting, such sand-eels have never risen on our horizon since.

The next day we attained the Tarwin River, where we were advised to strike inland towards Foster which we reached after a good deal of hard walking. Here luck beamed on us, as at the hotel we met Mr. Miller, the owner of Yanakie Station, the last outpost of civilization amongst the huge sand-dunes which had to be traversed, to reach the glorious beach, which would conduct us to the mouth of the Derby River, crossing which the delighted traveller finds himself on the much desired Promontory. Much desired, because who could see from Yanakie beach, the views of its mountains, capes, bays and islands without wishing closer acquaintance with them.

Yanakie Station itself was an islet of Scotch hospitality in the appropriate Sandy waste. The homestead had been built many years before by, I believe, Mr. Robert Power, well-known in Melbourne.

Gradual accretions of comfort had made it a most delightful house to be invited to and in after years my friends and I on a number of occasions enjoyed being with the Millers at Yanakie. It was a gem of purest ray, serene in a silver setting of sand, but why, why should it exist at all in such a place? Its presence there seemed extraordinarily inconsequent and the making of a fine garden almost miraculous. When victuals and drink had approximated us to our host and hostess, we inquired and found that Yanakie wool and Yanakie mutton were famous.

It suited sheep very well, if they were not kept too long on the sand dunes. After a time they developed what was known as coast disease. However a short visit to the seaside gave a lustre to the wool and a saline sapidity to the mutton, each of which is much to be desired.

The country, not much of which could be seen at a time, looked as if it would carry *minus* something of a sheep to the acre, but there were many sheep and a startling superfluity of kangaroos. They ranged in their hundreds, even in their thousands. Each subsequent visit showed us fewer kangaroos and now I believe they are extinct in these parts. There were beautiful brown wallaby to be seen in the protection of the Promontory itself. Alas, hardly any at this moment are alive, as the worst fire ever known swept the peninsula recently. In any case they never reach large numbers as do kangaroo, whose pretty heads and thin skulls could not contain sufficient brains to meet altered conditions. All their strength went into their tails. Would that my poor tale had half their complaint, it would run better. Mr. Miller had an uncanny facility of threading his way through the sand dunes to any given point, he knew their little weaknesses and their strength sufficiently well to drive a buggy through them.

All this returned vividly to me many years after, when dining one night with the President of the Suez Canal in his pocket paradise of Ismalia; he told me he always expected the Turkish attack across the desert. Through the ages, he said, humanity had been filtering through from Palestine to Egypt and *vice versa* and that he himself could drive a car through to Gaza, if he were given time, although the route would be circuitous, so many are the hard patches in a sandy desert, if you only knew where to look for them. The Millers kept us with them for two days and then we were shepherded to the beach. We reached it at a point about nine miles from the Promontory.

It always seems to me, that nowhere in the long wash of Australasian seas can their waves break on a more beautiful beach than this. It has length, as I have said, not the inordinate 90 miles of its brother beyond the Promontory, but proportionate to its ample breadth and its surrounding land and sea scape. Its colour is an exquisite creaminess, its texture of

sand so sympathetic, so friendly firm, that it returns the pressure of one's sole in most loving quality.

Alas, its life is of a mingled yarn, good and ill together. Waves are not the only things that break on it. Sordid seagulls seeking their meat from Nature carry the tightly closed mussel to great heights above the beach, dropping it in the certain hope of a glorious meal after the crash. We watched the whole process and felt a little outside the universe at the consummation. We often wondered, whether the gull gauged the height sufficient to smash the shell fairly exactly or whether he took odd lots of altitude in expectation. After our first righteous indignation, we also wondered whether such crashes were more vicious than boiling lobster cauldrons. A cripple would do his possible along this beach, so amply does it lend itself to walking. We should all be happy and good if Nature were as sympathetic to humanity everywhere as she is on Yanakie beach.

It was more than *Deo volente* that day with us, it was *Deo favente. Deus volens* is always with us when we admire Nature, but when *Deus favens* regards us, we reach the very seamark of our utmost sail towards beatitude. As luck would have it, my father had sewn into my youthful memory Bayard Taylor's lines, which tumbled over each other in trying to get out into surroundings that so suited them. So good was the paternal sewing that here they are, without looking at the book:

The sea is a jovial comrade,
He laughs where'er he goes.
His merriment shines in the dimpling lines
That wrinkle his hale repose.
He lays himself down at the feet of the sun,
And shakes all over with glee,
And the broad backed billows fall faint on the shore
In the mirth of the mighty sea.

But the wind is sad and restless
And cursed with an inward pain
You may mark at will, by valley or hill,
But you hear him still complain.
He wails on the barren mountains
And shrieks on the wintry sea,
He sobs in the cedar and moans in the pine
And shudders all over the aspen tree.

Welcome are both their voices,
I know not which is best,
The laughter that slips from ocean's lips,
Or the comfortless wind's unrest.
There's a pang in all rejoicing,
There's a joy in the heart of pain
And the wind that saddens, the sea that gladdens
Are singing the self same strain.

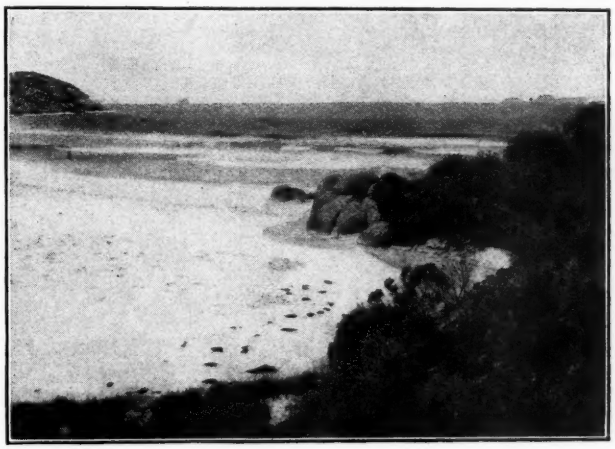


FIGURE I.
Oberon Bay.

And when I want them my waves on Yanakie beach still dance as pleasingly for me as ever Wordsworth's daffodils did for him. Their forms may not be quite so succinct, their foamy drops on breaking not quite so perfect as in those early days, but then every natural object had a clean cut outline, no misty edges of memory, everything was distinct from everything else—no woolliness of contour in thought or anywhere. So sharp and keen was the air through which we looked, that all the world to us had a razor edge of exquisite definition. Beautiful as are the melting selvedges of things remembered, embroidered in places with imagination, they cannot vie with the crystalline delight of things viewed on a youthful retina.

Nature draws firmly with a fine pointed pencil in our youth. She lapses into stipple in our age, when far off mountains are turned into clouds. Thanks to the scheme of things, the results of both are to the wise man satisfying. There is no need of Matthew Arnold's exordium:

If the clear impression dies,
Ah, the dim remembrance prize.

The exhilaration of air and sea, the gradual unfolding of the enchantments of the Promontory before us, the splendid going under our feet gave us too personal an enjoyment to waste our sympathy on dead and gone blackfellows who, patiently evolving to somewhere near nowhere through the centuries, had left marks of one stage of their slow-footed development in their kitchen midden on the cliffs, which had grown up near the mouth of the Derby River.

Why should our quick minds lie still to browse on aboriginals when we were coming into the sole possession of the glorious Promontory? We selfishly felt that the paternity of the one all Father was ours alone that day.

We didn't bother to wonder who Wilson was and I don't know now, except that he wasn't that Nemesis of Nationality, Woodrow, of that ilk.

We didn't even cavil at the Derby River being called a river, though a stream of water whose mouth functions but occasionally, hardly deserves the name of river, until you see its terminal lacustrine enlargement, which is imposing. Here we revelled in the exquisite interplay of every tint of brown and blue that Nature could invent or we receive. The purplish brown of the water (or was it brownish purple?) resembled the liquid beauty of the gem Alexandrite, which in reality ranks above rubies.

We drank in all this beauty to our saturation point in a silence which seemed strange; the huge sand dunes were now behind us shutting off the murmurs of the infinite sea and the mouthless Derby could not be vocal.

The Promontory wallows in a rainfall of over forty inches and in times of much rain on its backbone and much wind on the bosom of the Southern Sea, deep calls unto deep and the river finds its mouth before dying again in the ocean. The Vereker range, the aforesaid vertebral column, makes a find background for Nature to splash her purples on, looking, because of the long curve up from sea level at Corner Inlet, far more in altitude than surveyors in their exactitude will admit.

We crossed a bridge over the river and felt that our feet were firmly planted on the Promontory and our lines fallen in pleasant places; one, fortunately, had not fallen, namely the telegraph line, which we felt sure would end in our lighthouse, good familiar creature that it was. If we felt tired, we were to follow its linearity slavishly, but if we felt a bit above ourselves (the gravity of our knapsacks prevented the levitation being excessive) we could follow the coast after the tidal river and pick up the line again by going due east inland from Oberon Bay.

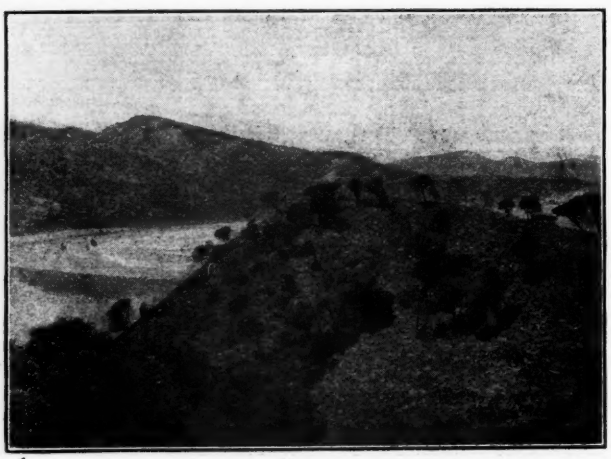


FIGURE II.
Norman Bay.

Need I tell you which alternative we young people took, especially when I mention that it was a very hot day? We had been told that the telegraph route was waterless for several miles and we knew that a delightful little stream was waiting for us, dallying with the sunshine at each extremity of each little bay. So we tackled the coast track, sympathizing with the musical sands in Norman Bay and laughing at the Bad Saddle until we were on it, but when we descended to the magic sands of Oberon Bay we felt that the Angel of Peace had consummated her descent with us. In this bay, most exquisite of Nature's resting places, we unharnessed, we drank, we ate and our souls expanded, too. After a time we wondered where Titania was, how could she be absent from so fairy a place as Oberon's Bay? We watched the sun diving through those smallest of waves that evanesced on the beach, our eyes dilated with enjoyment of the crescent of silver sand, of the islands which break the middle distance so appositely. I suppose criticism can be urged against anything; the supper menu in Olympus may have been a little monotonous after a time, but the only possible criticism of Oberon Bay and its surroundings is that there is just the slightest suggestion of theatricality in its landscape. Nature has a little imitated man in his constant desire for symmetry; cape calls to cape, island balances island, stream answers stream. How Stanfield would have spread himself and his canvas with such a land and seascape to paint!

Yet to us that late afternoon it was perfect and whenever I have seen it since, Oberon Bay displaces all remembrance of other beautiful restings. We could not leave it, so hallowed and so gracious was the time; save the iterant thud of wavelets dying on the sand, a sort of subliminal sound of which silence is made, all was still, "So still was it, that we could almost hear the sigh of all the sleepers in the world and all the rivers running to the sea."

Alas, we did not notice for a long time how the gold slanted in the wavelets; suddenly we felt it was late and the unknown loomed ahead of us, our spirits and our shoulders groaned, but we got under way again. We knew the Promontory was only thirty-eight miles long from the cliff which sustained the lighthouse to the northern foot of Mount Singapore. We knew that the mouth of the Derby River bisected that thirty-eight and that the Bad Saddle divided again the southern half; who were we, who had roped in Buffalo the previous season, that we should worry over the mean nine miles or less of telegraphic line? We would go with the current, only not so fast and all would be well.

It took a long time to thread our wavy way through the sand dunes and reach the line. It was bad walking country; even the native bears never walked here, every eucalypt was swarming with them, climbers if you like, but walkers never.

A waterspout which stalked ashore in Oberon Bay the next year and followed our tracks found it very hard going; if you can judge by the enormous mess it made of everything, the scar is there yet. When I last saw it, it was as a book, where men may read strange matters. I am lucky enough to have a photograph of what this mad dog of ocean did when he ran amok amongst the beauties of Oberon Bay.

Alas for the amorality of things; the wretched telegraph line, which up to now we had looked upon as our best friend, could not go straight. Down in

the welter of the south-west mass of the Promontory it indulged in an angle which we knew, but would not admit, was a right angle. How could it be right when it added a mile or so to the road which, not content with horizontal angles, would slide into almost vertical ones.

It was after many of these ups and downs that my chum, to my consternation, directed my attention to men on white horses in scrub where a horse could not penetrate. I nearly as possible saw them too, by his direction. It was almost dark and we were both getting poisoned by fatigue and had no antidote in food, so that it was with great relief that we got ourselves on to the last little peninsula which carries the lighthouse. The coming down in the dark to its isthmus was not enjoyable. We didn't realize and didn't want to, the glories we were missing. The moon rose only to show us another hill to climb before we could attain the lighthouse. We were sure the skull rocks grinned at us as we passed and I didn't wonder, they could have seen nothing more pitiably funny, since they were in the heads of Behemoths æons ago.

We reached the lighthouse *columen et tutamen nostrum*, but Fate had one more rap over the knuckles for us, in return for many of ours on the little door. We could not get in. Of all that visits the Promontory, a traveller was *rarissima avis* in those days. We had started that morning from Yanakie Station, young 'tis true, but giving ourselves the airs of all the ages. We finished prematurely old and distinctly undernourished. We eventually got in through the thick granite walls and soon let the astonished officer in charge know that we had not eaten for many hours. His food supplies were at a low ebb, but he did not deny us a crustacean of enormous size. It seemed to us as this lay in the larder embroidered with a marvellous phosphorescence, that he must be the king of all crayfish. I cannot give exact weight and measurement, but they exceeded greatly anything we had seen. Nothing could make light of him in our eyes but the aforesaid phosphorescence.

We had taken our gruel manfully during the day, we took our regal crayfish wolfishly at night. Another sign of our decline of soul. Alackaday these signs were accumulating, each did not want to face the return journey, especially when he thought of the tangle of dunes, somewhere in which Yanakie was hidden and each was not game to let his heart's best brother know the depth of delinquency into which he had slid.

I would like to tell this gentle audience that this was the only occasion on which pale, cold cowardice unruddied the drops that visited our sad hearts.

It had been a long and very hot day and we had not realized its length. With other friends I have traversed the distance from Yanakie to the southernmost point of our continent in two days, in three days and once we dallied four days over the journey and the two, three and four days were all stuffed with enjoyment.

After sleep of many hours we basked in sunshine and irresolution all the next day. Deadliest of demons is Opportunity. If we had never fed of the dainties that are bred in a wavelet on Oberon's Beach, if we had had a little less digestive langour, we should never have taken Occasion by the hand in the mean way we did.

FIGURE III.
Mt. Norgate.

Occasion turned out to be the schooner *Alice*, who was returning empty to Queenscliff; so were we, though we did not know it then. Hers was the passive absence of fullness, ours proved to be the active presence of emptiness. We slunk on board with our knapsacks at the western embarkation cove and a favouring gale took us away from the Promontory we were so basely deserting. The gale overdid it and soon we were in nautical as well as stomachic difficulties. The old captain was evidently very concerned, as he admitted after at Queenscliff. Such sudden storms are worse in summer than in winter. My chum soon succumbed, leaving me in a very short-lived superiority. I had determined to show to myself the power of mind over body and I dwelt on thoughts beyond the retches of my stomach, but it was no good, the stomach held the stage, if nothing else. At Queenscliff with the last shred of decency we had left, we telegraphed to Yanakie apologizing for our disappearance. *Finis decoronat opus.* Not the veriest vestige of viking virtue had clung to us from traversing Norman Bay. The Normans found the seas too narrow and the land too tame. We found them the opposite.

He who travels to the Promontory by sea in a yacht or the Government relieving steamer will tell you that the eastern side with Waterloo Bay and Refuge Cove is far finer than the western side with Norman Bay and Oberon Bay, but if you travel on

foot, these latter exceed the former by as much. A passenger on a ship rounding the Promontory has as little idea of the beauties of hill and dale, of running stream and argent beach, of wind-blown grass trees and subtropical foliage, as the mariner voyaging in the Ægean who goes not ashore, has of the charming multicoloured towns, glorious groves of trees, splendid vineyards and beautiful women sheltered in the ravines of the Greek islands.

Waterloo Bay is fairly easy to get at from Oberon Bay though the very few miles which separate their waves, take long to traverse. From the lighthouse round the coast to Waterloo Bay is rough, but from Waterloo Bay to Refuge Cove is very rough indeed; there is quite as much arm work as leg work in the transit which at best occupies many hours. It is these riven complexities of granite and the density of scrub that make Refuge Cove so extremely difficult to get into or out of, except by sea.

In a western gale Refuge Cove is untroubled; not so he who would explore beyond it. Thus yachtsmen seldom know much of the beauties of the western bays and promontories.

FIGURE IV.
The Lighthouse.

One of the most charming surprises in a tour which is full of changing beauties of landscape is met with a couple of miles after leaving Derby bridge. The track leads towards the heart of the Promontory and very soon no hint is given you by Nature that ocean is still near you on both sides. It is easy to imagine yourself in the central tangle of the Strathbogie ranges, so inland is every prospect. The path conducts to a spot about one thousand feet above the sea, between hills, where suddenly is disclosed to our wonder-filled eyes, the sunlit expanse of the Southern Ocean, with old mother earth struggling to bathe each promontory in its glory.

Islands off each cape have effected complete liaison with the all encompassing sea, but—can the cinema of Nature go backwards? Surely that spouting, carapaced, tail-lashing monster is antediluvian or stay—is it only Norman Island? The likeness to such a monster which knew not the Flood is very close; its shape, the waves breaking at either end, give the strongest impression of some vast animal forging through the water with the energy of many mastodons. He is certainly no more bizarre than many Nature has already fashioned. Whoever I had with me at this place and moment of surprise was always fascinated with the appearance and antics of my monster of the prime and would afterwards speak of his sudden appearance, as the *pièce de résistance* of a trip full of good things.

Alas, his palæozoicness oozes to vanishing point by the time one reaches the beach opposite his granite sides. His monstrosity loses and his insularity gains with every step downwards.

Like each beach on the Promontory this one has all the virtues in which a beach should rejoice. On one occasion we pitched our tent some hundred feet above it, beside a delicious little stream which we learnt afterwards had local notoriety as Whisky Creek. Why we could never make out, but we conceived the name must have been born in some Celtic cerebral convolutions with a dim memory of Uisk, Esk, Usk, as synonyms for water.

We went to sleep in our bags with the prediluvian monster as our last waking view and there he was in the same place in the morning still forging ahead in well anchored stationariness.

I thought of him in most friendly memory when on board the *Orvieto* in 1914. Every morning in the round of the porthole I saw exactly the same proportion of the ship stationed beside us as I had noted on going to bed. The station keeping of those thirty-nine vessels in three lines right across the Indian Ocean was wonderful and there were *Emdens* and things about part of the time. We went down to bathe, of course; the beloved physician and I took him who now sleeps well on Gallipoli and him who has lost his right hand in a bombardment also at Gallipoli, a bombardment of X ray particles in the depths of a ship.

The physician and I on general principles decided that we would take them some distance out towards our monster. As they could not swim we would take them out one at a time and each of us would hold a hand. We took the radiographer first and we rushed through the very real billows; each felt the confident handgrip of him who was many inches shorter than our stature. We each returned the grip. After some minutes of billowy joy, which half-drowned ourselves, it simultaneously and suddenly struck us that the handgrips were becoming somewhat convulsive, so with one accord we pulled our chum up and avoided a coroner's inquest by about a minute and two ounces of sea water. He observed afterwards that he was full up and there was no denying it. Our other chum had paddled

and washed and wasn't taking any more of the Southern Ocean. Each of these bays and there are several, provides enough enjoyment of all sorts for a week; how ill-advised then was our first restless ecstasy of a day.

Ever after our first folly I always insisted on doing the Promontory with somewhat of dilatoriness. Our first fine careless rapture was as much a solecism as drinking Château Yguem at a draught. Since, I have always sipped the Promontory. The radiologist was also a photographer of the first water and he took many perfect presentments of these parts. Some of these I had made into lantern slides. The one which on exposition created the greatest anticipatory excitement I called "Dr. S—— Bathing in the Tidal River." So it was; but alas for the public gaze, a big boulder behind which he had just retreated defended him from its fierceness.

We always played with the musical sands.

> Now lay thine ear against this golden sand
> And thou shalt hear the music of the sea.
> The hollow tunes it plays against the land
> Is't not a rich and wondrous melody?
> I have lain hours and fancied in its tone
> I heard the languages of ages gone.

Now it is not quite as Tom Hood says, because you have to lay your sole against this golden sand before it will discourse its most excellent music. It is worth going all the way from Melbourne to Norman Bay to take this little musical walk; it is only a small portion of the beach that responds to plantar stimulus in musical numbers.

A party of us, arriving in Oberon Bay before midday on one trip, decided to get to the top of Mount Oberon. The sum of two thousand feet which our aneroid made it is not much as hills go, but the feet start to climb from the plain of the sea. All the way up the vegetation is poor and scanty, very much weathered, grass trees with their hair much blown about showing how the robber wind "comes swooping from the west."

I should pause before taking a botanist to the top of Mount Oberon. He would become as balmy as the air when he saw just beyond the highest point a most definite line demarcating the limit of the west wind's sovereignty. A little way down from the top on the land side, the vegetation alters entirely; you see in one glance tree ferns, hazels, sassafras, stately gums, musk trees, wonderful wattles in the wildest luxuriance. The transition from windswept monotony (I must be temperate) to sub-subtropical prodigality in flora is acutely interesting.

We all noticed that with every rise in altitude on Oberon's mountain, the island clusters and the island individuals assumed greater pictorial importance in the landscape. The acme is reached in a swiftly descending gully, affording a home to a little stream, which before losing itself in a precipice bound inlet of the Southern Ocean, laid its dying strength out in a pool with a waterfall at its edge. The steep side of that long glen gave us the most charming of frames for the silhouette of Rodondo on the horizon across the sunlit sea.

Rodondo lies due south and rises inaccessibly from the sea several miles away. Its quite respectable height is magnified by its setting seen from far up the glen into a gigantic apparition of altitude. At one and the same time it seems stupendously solid and yet intrinsically ethereal. A photograph emphasizes the ethereality rather than the solidity of Rodondo. This view is one of the crown jewels of the Promontory and is not easy to find. We luckily had a desire to see where the stream met the ocean and the meeting place was beautiful beyond words, which the name of the creek is not—Roaring Meg—and when she roars, a wilderness of lions would not be regarded.

The backfire of memory often sparks for me, a momentary glimpse of one evening when we lapped beauty and knew no satiety. The moon achieved the impossible, what time the day was joining the past eternity to make more fairy the fairiness of Oberon's earth and sea. In the last lap of waning consciousness we shall not forget how

> The long day waned, the slow moon climbed,
> The deep moaned round with many voices.

This was the most delightful of all our camps, secluded enough behind a large boulder to give some sense of home, open enough for the reception of every note of sea music and of every skyey influence.

Dear audience, you can find it easily, you will know the rock by the marks of our fire on the granite. Fire marks are the most longevitous of human monuments. *Vide* Juno's Temple at Girgenti, which shows to each succeeding generation the marks of the fire lit by the Carthaginians one awful night in B.C. 406.

On the proper day and most days answer to this adjective, the descent from the transverse track which takes the line across the end of the Promontory's mass to the very narrow isthmus leading to the subpeninsula which carries the lighthouse, is as picturesque as anyone could wish. Agreeing with other views on the Promontory in natural beauty, it has what to many is an added charm in the presence of evidence of man's work and a lighthouse, though built solely for stable height, always retains a touch of the old Roman *"firmitas"* about it which dovetails appositely with the usual stern surrounding from which it rises.

In the first third of life the spirit of solitude is blood brother to our own, but as the light of common day grows to its strength, the light of common human activities becomes more pleasing and some earnest of man's propinquity puts a familiar finish to any landscape for most of us in the middle span.

The multitudinous smile of ocean is reflected in the many twinkling mirrors of glabrous leaves for, protected to some extent from the west wind, well grown. trees clothe this Austral terminus; such a wealth of welcome suffuses the seeing eye of man. Such a lisping of leaves carries the gracious message to the hearing ear; surely the giver, Nature, and the receiver, man, are doubly blest. Capacity of reception grows with opulence of giving and the stream of gifts with the enlargement of receptivity.

What then more natural than that our private globulicule of consciousness should return to that giver who has given so much. "The dewdrop slips into the shining sea."

At the isthmus there are two landing coves; so congruous are they with the art of landing, that perforce they seem to be artefacts and not facts of Nature. One or other can play its part in almost any weather.

When the hot and tired traveller sees these twins he, without shadow of doubt, decides to bathe. To dive off Australia using the smooth cove, which is likely to be the eastern, is an irruption into bliss, the return to Australia, at first seemingly impossible, is truly hard work and the actual landing on the continent shows colourfully what a prickly pair these coves are. So sharp is the granite that every salient in one's body all the while runs blood, one's knees being the goriest.

And now, dear audience, even your patience will wilt, so the moral.

In the name of all the gods at once, get ye to the Promontory, set but one foot on it and itself will do the rest. Would I could be your guide, but think not that I envy your youth, it is an old age, adorned with a triple tiara of which I am envious; it was worn with dignity I dare swear by a lady in Somerset, of whom her tombstone says amid the recital of other virtues:

> She drank good ale, good punch, good wine
> And lived to the age of ninety-nine.

What a satisfying continuity of vinosity!

How delightful not to lose one's punch before ninety and nine. There's both rhyme and reason in my envy.

When I had the average of your years, all the world was before me, now my physical view is bounded by the dull decorum of my chair, but I would have you believe that I, too, have lived and walked in Arcadia.

Reviews.

SKIAGRAPHIC EXAMINATION OF THE THORAX.

In the second volume dealing with the radiological investigation of thoracic conditions the late Dr. Walker Overend has passed under review the various non-tuberculous affections.[1] Bronchitic, pleuritic and pneumonic changes, including pneumothorax and abscess, are considered in order. Then follow two chapters on tumours, one on the diaphragm and another on foreign bodies and injuries.

The volume contains a good collection of radiological material and it is a valuable book of reference and one that should be read by all radiologists. The reproductions are of moderately good quality. Few of them, however, take in the whole of the thorax and in many a considerable part of the pathological area is not included. They also will be found not to agree with the reference numbers in the text, except in the case of the first half dozen or so; an extra skiagram has apparently been interpolated early in the series and the corresponding corrections have not been made in the text. The book is stated to have been seen through the press by the author's son who is also a radiologist, but the revision has been faulty. It is possible than the son was disinclined to be bold in dealing with his father's work. The literary standard is poor and there are many printing errors.

A useful bibliography is attached to each chapter, but here again this would be of much greater value if more care had been given to details. In many instances when reference is made to journals, only the year is given, month, number and page all being omitted.

The clinical aspect of the various pathological conditions is discussed along with the radiological, though frequently somewhat at the expense of the latter.

In spite of these defects, however, the book constitutes a useful contribution to the literature.

[1] "The Radiography of the Chest": Volume II, by Walker Overend, M.A., M.D. (Oxon.), B.Sc. (London); 1928. London: William Heinemann (Medical Books) Limited. Demy 8vo., pp. 196. Price: 21s. net.

PROGRESS IN SURGERY.

"RECENT ADVANCES IN SURGERY," by W. H. Ogilvie, admirably fulfils its title.[1] The contents are well arranged and at the end of each chapter is a bibliography for the benefit of those seeking further information on the different subjects. The discussion on neuro-surgery is particularly good and the difficult subject of gastric surgery is lucidly and impartially analysed; the statement that "the incidence of jejunal ulcer is now known to be about as great after gastrectomy as after gastro-jejunostomy" is a disquieting one and needs confirmation.

A few quotations will show the quality of this book in which the author not only summarizes the recent surgical claims, but discusses and criticizes them and in addition revives many old truths that are in danger of being forgotten.

"Tumours of the posterior fossa, and especially of the cerebello-pontine angle, are those most frequently associated with an internal hydrocephalus."

"Meningiomas usually occur in close connection with the venous sinuses of the cranium, and are much more common in the anterior and middle fossæ."

"Ulcers on the edge of the tongue or the floor of the mouth are rarely gummatous."

"There is general agreement that chronicity in the non-tuberculous varieties of empyema is most commonly due to inadequate or delayed drainage during the acute stage of the disease, contributory factors being fibrosis of the lung and persistent infection of the pleura."

"Where symptoms persist or recur after gastro-enterostomy, it is usually found that the stomach empties rapidly through the stoma, and that the free acid equals or exceeds its pre-operative level."

"The absence of a positive reaction for occult blood in the stool is definite evidence against a carcinoma anywhere in the alimentary tract."

"The high mortality of gall bladder surgery is largely due to delay in diagnosis, and the presence of cholangitis and hepatic insufficiency by the time the case reaches the surgeon's hands."

"It is generally agreed that operation should not be undertaken for nephroptosis which is not causing a mechanical interference with renal function."

"The importance of renal dwarfism to the surgeon lies in the invariably fatal results that follow operative treatment of the deformities."

"In spondylitis deformans an associated prostatis has been frequently noted."

[1] "Recent Advances in Surgery," by W. Heneage Ogilvie, M.A., M.D., M.Ch. (Oxon.), F.R.C.S. (England); 1928. London: J. and A. Churchill. Demy 8vo., pp. 468, with illustrations. Price: 15s. net.

The Medical Journal of Australia

SATURDAY, DECEMBER 1, 1928.

The History of Infectious Disease.

HISTORY is usually defined as a record or account of past events. In its accepted sense it may include an account of contemporary happenings. History is necessarily constructed from preserved records and in consequence its reliability depends on the accuracy of those records. It is universally recognized that personal and national bias, the limitation of observation, the conscious or unconscious suppression of relevant facts and exaggerated emphasis on relatively immaterial incidents may render the records untrustworthy and misleading. In the individual and national affairs of mankind, it is almost impossible to obtain an objectively impartial record. In consequence the truth, the whole truth and nothing but the truth are unattainable as far as political and sociological life is concerned.

In the old world the history of disease has a value far beyond its academic interest. It illuminates much of the behaviour of men and of the relations of peoples to one another, if the records are scrutinized critically and events are accepted as facts only if confirmation from independent sources is available. A study of the gradual accumulation of knowledge and of the significance of that knowledge is found to contribute to progress in the investigation into the nature of diseases and into their natural history. The study is immensely difficult, because in the early records facts were frequently distorted by superstitions and bizarre beliefs. On the other hand the historian discovers that wisdom does not belong exclusively to modern times and that many long forgotten explanations of observed phenomena have as much claim to recognition as have the hypotheses supposed to be based on modern doctrines.

We have much to learn from more recent history. The records of a century and a half of human endeavour in Australia contain a wealth of important facts and of significant indications that demand our careful consideration. The medical world and indeed the whole community are indebted to Dr. J. H. L. Cumpston, the Director-General of Health, for two ponderous tomes which have recently been published by his department. The first is an exhaustive account of all that is ascertainable concerning intestinal infections and typhus fever in Australia. Dr. Cumpston has gathered an immense amount of information from various sources on this subject and has handled the records with conspicuous skill and critical ingenuity. Throughout the seven hundred odd pages he marshals facts, opinions and deductions in such a manner that the reader is led to the adoption of a wide understanding of what probably happened in the misty days of the end of the eighteenth century and the first half of the nineteenth and what actually happened in more recent times. He presents his subject in the light of present day knowledge, but uses his discretion in accepting or refusing statements found in official and non-official records. Many of the earliest reports are of great interest, not only for the purpose to which Dr. Cumpston puts them, but also because they throw light on the general history of the beginnings of the colonial life of Australia. The confusion that existed in regard to enteric fever, typhus fever, cholera, dysentery, enteritis and food poisoning, is partly responsible for the unreliable statistics of the first half of the nineteenth century. Notwithstanding the doubt concerning the nature of some of the outbreaks in the early days, their history contains valuable lessons even at the present day. The relation of efficiency and results in regard to quarantine is well illustrated.

It is not our intention to review the contents of the books at present. That will be reserved for a future occasion. Our object is to call attention to these contributions to the medical history of our own country and to recommend the student of hygiene to build his science on the solid foundation of experience and a masterly interpretation of the records from the earliest days of the British development of Australia. The second book is a

history of diphtheria, scarlet fever, measles and whooping cough in Australia. The first of these four diseases is probably of greater practical importance to us at the present time than the other three. It has taken the greater toll of lives; its ætiology has long been disclosed; an almost certain cure is in the hands of the medical profession; it is now possible to distinguish between those who are susceptible and those who are immune. From an epidemiological point of view Dr. Cumpston's facts and figures and his deductions from these data form a lesson of paramount importance. His story is all the more entrancing because it may be accepted that nothing was known concerning this disease prior to the beginning of the nineteenth century and that diphtheria first appeared in Australia a little more than half a century later. There is, it is true, a great amount of information contained in his book concerning scarlatina, morbilli and pertussis, all of which is worthy of much careful study and repeated consideration. Those who have no liking for figures, will be able to glean the facts and doctrines from the narrative and will be enabled to gain a clear understanding of the march of events of these infective processes as they spread over the six great divisions of the Commonwealth in waves of varying magnitude. The student of statistics, the man to whom figures make an irresistible appeal, will gain an even broader conception of what has transpired and what is taking place at the present time.

The work represented by these two volumes is colossal. Dr. Cumpston commenced his collection of facts and opinions, of records and deductions nearly twenty years ago. His industry is apparent from the mass of data presented. It becomes increasingly evident as the reader follows him in the fascinating journey through the six colonies and States from the early settlement to the present day. His patience, ingenuity and skill have received a fitting reward in the unquestionable success of his undertaking. Attention should also be directed to the facts that these valuable contributions to epidemiology are purely Australian. The author is an Australian holding a high office and the volumes are among the first printed and published by the Government Printer at Canberra.

Current Comment.

ABSCESS OF THE LUNG.

ABSCESS of the lung may arise in several ways. It may be the result of trauma, by the penetration of a foreign body or from injury by a fractured rib. It may be the result of a blood-borne infection, as is seen in pyæmia. It may be due to involvement of the lung by direct spread from a neighbouring suppurative process, for example from a subphrenic abscess. It may represent the final stage of an infective process in the lung, as in pulmonary tuberculosis or pneumonia. It may be the direct outcome of the inhalation of infective material into the air passages. A great deal of work has been done on the question of aspiration as a cause of abscess of the lung, especially after tonsillectomy and other operations of the upper respiratory passages. With the introduction of the intratracheal method of anæsthesia aspiration of foreign particles into the bronchi at surgical operations has become much less frequent. The question of pulmonary abscess, however, is of such importance that no excuse need be offered for making references to a recent experimental investigation by Minas Joannides.[1]

Joannides has carried out a series of 87 experiments on dogs by the introduction of various substances into their bronchial passages or into the lung substance or into the nasal sinuses. In the first place fourteen experiments consisted in the insertion into the lung substance of foreign bodies, such as peanuts, agar agar, "navy" beans and pennies. In no instance was a characteristic lung abscess produced, but there always resulted a thick walled cyst, surrounding the implanted foreign body. The conclusion reached was that a foreign body implanted in the lung does not ordinarily produce an abscess unless it is infected with organisms that produce either gas gangrene or bacillus infection.

Substances in great variety were introduced into the bronchial passages of dogs. These included citrated blood obtained at tonsillectomy, blood of the same type mixed with tonsil tissue and scrapings from the teeth of patients with *pyorrhœa alveolaris*, gastric contents with or without pyorrhœa scrapings, bits of teeth and blood obtained from tonsillectomy, the injection being made during an abdominal operation on the dog, broth suspension of pyorrhœa scrapings or abscess sputum, mixed with small pieces of infected teeth or with small pieces of fresh tonsil tissue, the dog's own blood mixed with sputum from a patient with lung abscess, fresh dog blood mixed with pure cultures of *Staphylococcus albus* and *aureus*, blood mixed with bismuth subcarbonate when the animal was lying in the horizontal position. Other experiments included the implantation of the products of pulmonary abscesses into the paranasal sinus. It was found that abscesses were produced in twenty-one

[1] *Surgery, Gynecology and Obstetrics*, October, 1928.

of the eighty-seven dogs. The findings may at first sight appear surprising. It was found that the changes resulting from the introduction of staphylococci and blood were identical with those produced by pure sterile fresh blood. It is concluded that the lung is immune to the ordinary pyogenic organisms. Many of these organisms are normal inhabitants of the upper respiratory tract and the animals used were presumably healthy. It is therefore not altogether surprising that no gross pathological lesions resulted when they were introduced into the lower part of the respiratory tract. The same phenomena might be expected to occur if other microorganisms, normally found in the upper respiratory tract, were introduced into the bronchi under anæsthesia and allowed to spread into the finer ramifications of the air passages. It was also noted that the production of pulmonary abscess depended upon the physical state of the aspirated material. Thick and tenacious material behaved in a manner similar to a foreign body. It remained in the larger bronchi and when the animal recovered its coughing reflex, was forcibly ejected. The abolition of the coughing reflex was found to be important, especially in some dogs which were submitted to abdominal operation. The regurgitation of gastric contents is a potent factor in the causation of post-operative pathological conditions in the lungs. Although it has been shown that lesions may arise in the lungs after abdominal operations performed under local anæsthesia, this is unlikely to occur. The regurgitation and the abolition of the coughing reflex are factors against which precautions must be taken.

There is another factor which needs emphasis. Joannides refers to it. His meaning is clear, but he expresses himself very badly. Among the factors which are "of great importance in the production of lung suppuration" he includes "the action of the cilia which clear the trachea and bronchi by rhythmic movement." He means to indicate that the failure of the action of the cilia is responsible. This is a mechanism which is apt to be overlooked in all infections of the respiratory tract. Provided that drainage can be established, the ciliated epithelium can do a great deal towards clearing up an infection. This is evidenced particularly in the nasal accessory sinuses. It is also seen when a patient suffering from bronchiectasis is inverted so that the greater part of the pent up discharge is allowed flow out of the bronchiectatic cavities.

Joannides's work has not brought forward anything new, but it emphasizes the importance of care in anæsthesia—that the presence of blood and mucus in the naso-pharynx be avoided as far as possible, that the coughing reflex be preserved when blood and mucus are present, that gastric regurgitation be avoided. It also points to the importance of the eradication of oral and nasal sepsis. One criticism which might be levelled against it, is that not sufficient detail is given of the microscopical findings in the bronchi and alveoli of animals which received large doses of infective material. The percentage of abscesses produced was relatively small for the large doses of material injected—from ten to twenty cubic centimetres. If the microscopical findings were described in typical instances in which no abscess occurred, it might be possible to determine whether the foreign material was expelled by coughing or whether the resistance of the lung to the foreign invasion was brought into play.

CYSTADENOMA OF THE BLADDER.

TUMOURS of the bladder reported as cystadenoma are as a rule small, they may be either single or multiple and are generally found in the neighbourhood of the trigone. Some diversity of opinion has been expressed as to the origin of these tumours. Some observers have held that the mucous membrane from which these adenomata arise, are part of the structure of the bladder. Others have denied this. Ewing states that Albarran and Aschoff found that short tubular glands were regularly present in the bladder mucosa, especially in the vicinity of the trigone and around the ureteral orifices. These glands have been looked upon by Virchow and others as aberrant prostatic glands and by Aschoff as urethral glands. Others have interpreted them as the result of the snaring off of papillæ of epithelium by thickened connective tissue septa.

Raymond H. Goodale has recently reported the occurrence of a cystadenoma which was found at *post mortem* examination between the left ureteral orifice and the urethra.[1] The patient was a man, seventy years of age, who died of lobar pneumonia. The tumour measured four by four by two centimetres and was lying under the mucous membrane of the bladder, projecting into it like a sphere. It was multicystic and some of the cysts contained colourless, homogeneous gelatinous material. The mucous membrane over the tumour was covered with papules which had the characteristics of *cystitis cystica*. On microscopical examination the tumour was seen to be separated from the bladder muscle by an irregular band of connective tissue. In the connective tissue were many lymphocytes and thin walled blood vessels filled with blood. No connexion could be found between the tumour and the prostate. The cysts in the tumour contained one or more layers of low columnar and cuboidal epithelium. In some cysts there were deep blue stained masses which resembled prostatic concretions. The bladder was affected by hypertrophy. In discussing this tumour, Goodale states that his findings bring him to the conclusion that it originated in aberrant prostatic glands. He goes on to state that it is generally agreed that there are no glands in the bladder except aberrant prostatic glands. If this is so, there is no doubt about the origin of his tumour. If Ewing's statement is correct, such a tumour as a primary adenoma of the bladder may occur. Goodale's tumour has all the appearances of prostatic origin.

[1] *Archives of Pathology*, August, 1928.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Thyreoid Treatment of Alopecia Areata.

M. B. GORDON (*Archives of Dermatology and Syphilology*, June, 1928) reports the history of a patient with *alopecia areata* successfully treated by thyreoid extract. The patient was a child, aged four years. The hair began to fall out nine months previously and the alopecia was almost total. Local treatment had had no effect. Thyreoid extract was given twice a day for a week in doses of 0·006 gramme (one-tenth of a grain). This was gradually increased up to 0·06 gramme (one grain) twice and then three times a day. After each week's treatment there followed a week without any treatment at all. Within a couple of months the greater part of the hair had begun to grow again.

Basal Squamous Cell Epithelioma.

H. MONTGOMERY (*Archives of Dermatology and Syphilology*, July, 1928) states that transitional forms frequently occur between basal and squamous cell epithelioma. His study is based on the analysis of sections of one hundred and nineteen consecutive cases of epithelioma of the skin proper studied under the microscope. The author draws the following conclusions: (i) Basal cell epithelioma is not a morphologically closed entity, but may become a basal squamous cell epithelioma or even a squamous cell epithelioma; (ii) transitional epitheliomata presenting features of both basal and squamous cell epithelioma occurred in 12·6% of a series of one hundred and nineteen epitheliomata of the skin and have been grouped under the name of basal squamous cell epithelioma. They represent a metamorphosis of basal cell epithelioma to squamous cell epithelioma and are not degenerative forms of the latter. The author claims that the transitional forms are indistinguishable clinically from the basal cell type. The basal squamous cell tumour is relatively resistant to radiotherapy and then may metastasize as a squamous cell epithelioma. It is maintained that 15% or 20% of the growths diagnosed as basal cell types prove to be transitional types on microscopical examination and a guarded prognosis should be given.

Actinomycosis, Cutaneous and Systemic.

H. FEIT (*Archives of Dermatology and Syphilology*, June, 1928) reports two cases of actinomycosis in which the ray fungus was found on microscopical examination. In the first case, that of a girl, aged twelve years, the lesion began as a hard lump about the size of a bean on the cheek near the left nostril. It increased in size, occupying most of the cheek from the lower lid to the lip, before a correct diagnosis was made. The patient did well on 1·8 grammes (thirty grains) of sodium iodide each day together with one quarter pastille dose of X rays every week. The second patient was a labourer, aged thirty-seven years. His infection started as an abscess on the jaw followed by a pustular rash on the beard region and neck. The patient contracted pneumonia and died.

Lesions of the Mucous Membranes in Epidermolysis Bullosa.

N. TOBIAS (*Archives of Dermatology and Syphilology*, August, 1928) reports the history of a boy aged nine years who suffered from *epidermolysis bullosa*. He also investigates the literature of this condition with special reference to the affection of the mucous membrane. In the case reported bullæ were noticed one half-hour after birth, pregnancy and delivery having been normal. There was no family history of the condition amongst the parents or relatives, although a brother of the patient was said to have had a similar condition, but had died in early infancy. The patient was poorly developed and ill nourished with friable teeth. In the general examination no other abnormality was found except that tonsils and adenoids were enlarged. The buccal mucosa was affected. A survey of thirty-seven cases in the literature revealed that the oral mucosa was affected in twenty-seven, the throat and pharynx in three, the œsophagus in two, the eye in three, the anus in two and the penis in four.

A Fungistatic Strain of Bacillus Subtilis Isolated from Normal Toes.

S. O. CHAMBERS AND F. D. WEIDMAN (*Archives of Dermatology and Syphilology*, October, 1928) describe a series of experiments designed to test the possibility of yeasts and other microorganisms exerting an inhibitive effect on the growth of fungi. As ringworm of the toes was chiefly the problem in view, scrapings were taken from the inner surface of the toes of four normal subjects. Blood agar was used for the culture so as to include microorganisms which might not grow on other media. Fifty plantings were made from each skin. A total of 400 pure colonies was finally isolated. A stock culture of *Trichophyton interdigitale* was used as the first test fungus. Small pieces of this fungus of equal size were then mixed with each colony in turn and planted on blood agar slants. Controls were made of both fungus and microorganism. The tubes were kept upright at room temperature. After four or five days the control fungus cultures appeared. In many of the mixed cultures there was no evidence of any growth of the fungus at all. There were fifty such inhibiting strains all showing the same features, that is, the colonies grew rapidly, they were hæmolytic and dull green in appearance. The colonies were found to be due to the *Bacillus subtilis*. Eleven other species of fungi were then found to be completely inhibited *in vitro* by the *Bacillus subtilis*. Fifty normal persons were then tested and the *Bacillus subtilis* was grown from thirty-five. In the examination of fifty persons who had more or less clinical trouble between the toes, the *Bacillus subtilis* was absent in thirty-four instances when the fungi were either cultivated or found microscopically. Owing to the discrepancies existing between the microscopical presence of fungus and the existence of provable ringworm and also the difficulty in cultivating fungi, it can not be held that perfect results were obtained, but they did not refute the hypothesis. A clinical test was made on twenty patients in whom fungus was demonstrated. Colonies of the *Bacillus subtilis* were applied directly to the skin with definite improvement in a fortnight. Further trials are being undertaken.

Sarcoids and Related Lesions.

W. H. GOECKERMAN (*Archives of Dermatology and Syphilology*, August, 1928) in a review of seventeen cases of sarcoid observed by himself and a discussion of the literature of the subject draws attention to the difficulty of differentiating between Boeck's and Darier-Roussy sarcoids, *lupus pernio*, *erythema induratum* and nodular tuberculosis of the hypoderm. The author holds the view that this group of lesions is probably the result of invasion by the tubercle bacillus. The associated lesions such as adenopathy, iritis, parotitis and atrophic rhinitis, if present, should be looked upon as part of the syndrome of the condition. Fibrocystic changes of the bone and splenomegaly are often noticed. Such associated lesions may be a help in the classification of the cutaneous lesions. The microscopical changes are not sufficiently specific to serve as an aid in differentiating the lesions. They often fail to help in distinguishing them from syphilis and leprosy. The writer did not find arsenic a specific in Boeck's sarcoid or in any of the related lesions.

Autohæmotherapy.

B. B. BEESON (*Archives of Dermatology and Syphilology*, October, 1928) states that he has had excellent results in the treatment of *herpes zoster* by autohæmotherapy. The author mentions other successful results reported in the literature in this class of condition. Ten cubic centimetres of blood were generally used for an injection. In all the seven patients received sixteen injections of autogenous blood. This method of treatment was found to be very useful in relieving the pain, especially if the patients were seen early in the attack.

The Absorption of Salicylic Acid by the Human Skin.

H. LESLIE-ROBERTS (*British Journal of Dermatology and Syphilis*, August-September, 1928), describes the result

of an investigation into the absorption of various concentrations of salicylic acid in sixty-two patients suffering from skin diseases. Three solvents were selected—vaseline, alcohol and water. Urinary examinations were made. Only fourteen patients failed to give evidence of salicylic acid in the urine. In summarizing these fourteen cases the author draws attention to the significant fact that a large proportion of the patients suffered from *alopecia areata*. Absorption takes place from either of the three solvents. It was thought that probably vaseline was the best solvent. Permeability of the skin varies in different individuals and there is some evidence which suggests that the key to penetration is held by the fibroblasts of the cutaneous connective tissue. The powerful effect of salicylic acid on extravasated white blood cells is probably due to the ease with which it penetrates these cells, the resulting acidosis leading to their autolysis and final disintegration.

UROLOGY.

Urethral Stricture following Radium Therapy.

H. SINGER (*Wiener Medizinische Wochenschrift*, March 3, 1928) describes a case of stricture of the urethra following the application of radium for carcinoma of the vagina. The history was unusual because the patient, when aged twenty-two, had been treated thirteen years previously for the vaginal neoplasm. At the age of twenty-four she became pregnant and delivered herself of a living child which she fed at the breast. Owing to symptoms of prolapse five years later she was operated upon, a plastic vaginal operation with amputation of the cervix being performed. The tissues did not heal by primary union. Gradually she began to have difficulty with micturition and on examination the urethra was found to be compressed by fibrous tissue. The vagina was perfectly normal except for the scars following the operation. The stricture was gradually dilated with Hegar's dilators and the patient could pass urine freely. Singer comments on the success of treatment undertaken in the early days of radium therapy especially as she was a young woman. He advocates the use of radium for all cases of carcinoma of the vagina.

Rupture of the Kidney

W. R. DELZELL AND F. W. HARRAH (*Journal of Urology*, February, 1928) report on the condition of eleven patients with rupture of the kidney observed by them. The report is made in order to add to the clinical picture, to bring the literature on the subject up to date and to emphasize the importance of pyelography in this connexion. Spontaneous rupture of the kidney is extremely rare and occurs only in a diseased kidney. Seemingly small violence may cause a rupture of the kidney if it is in a state of hydraulic tension. Most traumatic ruptures of the kidney heal without surgical interference, but the patient should be kept in bed until the hæmaturia subsides. The majority of ruptured kidneys which require operation, may be saved by palliative surgery; few require nephrectomy. The symptoms of ruptured kidney are usually characteristic, but may resemble those of intraperitoneal lesions. Cystoscopy is usually not necessary for diagnosis, but should sometimes be done to determine the condition of the damaged kidney. Pyelography is an aid to accurate diagnosis in selected instances. Operative interference is indicated to prevent exsanguination, extravasation and infection and it is safer to investigate doubtful cases and to undertake an exploratory operation than to adopt expectant treatment.

Renal Back Pressure in Lower Urinary Tract Obstruction.

H. A. R. KREUTZMAN (*Journal of Urology*, February, 1928) has made a cystoscopic, pyelographic and cystographic study of patients with obstructive lesions of the bladder neck and urethra in order to determine the cause of renal back pressure. He considers that the commonest cause in adults is a constriction of the ureteric lumen as it passes through the bladder wall and that this constriction is due to hypertrophy of the surrounding bladder musculature. In these conditions ureteric reflux of the vesical contents is uncommon and when present it is due to a stiffening of the intramural portion of the ureter resulting from infection. In hypertrophied prostates, a rare cause of dilatation of the upper urinary tract is a kinking of the lower portions of the ureters by the *ducti deferentes*. These channels are pulled upon by the enlarging prostate and they finally become stretched across the ureter, kinking it.

Aberrant Renal Vessels and Hydronephrosis.

C. P. MATHE (*Journal of Urology*, March, 1928) considers that the great majority of aberrant renal vessels does not interfere with the ureter, but in a certain percentage of cases renal mobility causes the ureter to sag or hang over a fixed support which is provided by the aberrant vessels. This is characterized by intermittent, more or less regular attacks of pain occurring over a period of months or years, the onset of which is usually in the young adult. It occurs more frequently in people with the visceroptotic type of trunk and paravertebral fossæ. The kink in the ureter can be demonstrated by making a pyeloureterogram of a patient in the vertical position. The dilatation of the ureter always commences just above the point of obstruction by the aberrant vessel. The enlarged kidney can be palpated in about 40% of all affected patients. If a properly applied belt will not relieve the symptoms, operation is advised. In early cases division of the blood vessel and suspension of the kidney will suffice. In the more advanced type with much narrowing of the ureter where the vessel crosses it, this part of the lumen should be widened by a plastic operation. In severely affected hydronephrotic or pyonephrotic kidneys nephrectomy is advisable.

Radium in Bladder Carcinoma.

B. S. BARRINGER (*Journal of the American Medical Association*, February 4, 1928), has been gradually developing his technique in the radium treatment of bladder carcinoma. He advocates the implantation of gold "seeds" which are implanted into the growth by suprapubic operation and left in permanently. Gold seeds cause less slough and irritation than those made of glass. Each seed contains two millicuries of radium emanation and the seeds are planted 1·5 centimetres apart throughout the base of the growth. The implantation should be preceded by removal with the cautery of protruding parts of the tumour; by this means bleeding is minimized and infection is controlled. The cautery should be of the quick heating electric type. The author records a large series of cases in which bladder cancers have been controlled by radium.

Culture of the Tubercle Bacillus in the Urine.

JOSEF V. MANDEL (*Urologic and Cutaneous Review*, March, 1928) recommends as a complete, reliable and rapid examination of the urine for tubercle bacilli the culture method of Lowenstein-Sumyosti. According to Lowenstein's investigations a considerable part of all strains of tubercle bacilli which are pathogenic for mankind, are not so for guinea-pigs. To this category belong especially all strains of avian tubercle bacilli which can be grown easily by this culture method. The points of election for avian bacilli in man are the bone-marrow and the kidneys. The demonstration of these bacilli in the kidneys is extremely difficult for they cause no caseation, but only small lymphatic glands containing bacilli. A twenty-four hour specimen is collected and the sediment is permitted to fall and is then centrifuged. Then, after a 15% solution of sulphuric acid is added, the specimen is again centrifuged and then washed three times, for five minutes each time with normal saline solution. It is then implanted on a potato-glycerine medium. The test tubes are sealed up and are put in a dark incubator. The tubes are inspected once a week for colonies. These are like balls, varying from pin-head to split-pea size. The surface is uneven and "cobbled" in the human type, whereas the avian bacilli grow in shiny, smooth, moist colonies. The colonies appear in one to four weeks.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, Adelaide Street, Brisbane, on October 5, 1928, DR. EUSTACE RUSSELL, the President, in the chair.

X Rays in the Treatment of Exophthalmic Goître.

DR. B. L. W. CLARKE read a paper entitled: "Radiation Treatment of Hyperthyreoidism" (see page 670).

DR. GIFFORD CROLL congratulated Dr. Clarke on his paper. He would like to ask what percentage of patients came from the Downs, as Queensland was not yet mapped out into goître areas. Questioning the ætiology of the disease, he said it was generally considered that the lack of iodine was the primary cause and shock or strain was secondary. He mentioned the definitions of "hyperthyreoidism" and "toxic adenoma"; in all the sections he had seen there had been an increase in the amount of cellular tissue. Then came the debatable question of treatment. At the last congress the surgeons had carried the day and asserted that surgery, well done, gave a mortality of less than 1% and the results were so good that they considered it was hardly justifiable to use anything else but surgery in a patient whose condition did not subside with rest and treatment. If in time the radiologists showed that they could get as good and safe results as surgeons, well and good. Therefore Dr. Croll considered Dr. Clarke had started a line of good work which was well overdue. At present the only claim that treatment with X rays had over surgery was that there was not a cutting operation and there was no disfigurement.

DR. S. F. MACDONALD thanked Dr. Clarke for his interesting paper and the original work in it which he considered also was long overdue. He said the surgical figures in his opinion were based on the results of surgery of those who had preeminent skill. He said that the importance of X rays lay in those cases in which the patients and friends did not like surgery and had heard of bad results. He referred to two patients treated and mentioned by Dr. Clarke and stated that Röntgen vomiting and toxæmia could be checked by small doses of thyroxin. He would hesitate to use X rays on young patients with acute goîtres.

DR. HOPE MICHOD thanked Dr. Clarke for his paper and quoted the case of a girl aged four years and eight months with exophthalmos, enlarged thyreoid, irregular pulse of 160, systolic murmur, tremor, von Graefe's and von Stellwag's signs. She had been given one application of X rays in Sydney and had returned to the country where she had had no treatment but rest in bed. When seen eleven years later her pulse rate had been 84 with no irregularity. There was slight exophthalmos, but no tremor.

DR. N. W. MARKWELL thanked Dr. Clarke and asked whether there were any distinctive features in the five cases in which X ray treatment had failed.

DR. J. LOCKHART GIBSON thanked Dr. Clarke for his interesting paper and asked for the difference in the use of X rays and deep X ray therapy.

DR. J. V. DUHIG said that Dr. Clarke's paper was of importance and value. He had always understood that ordinary X rays were used, but deep rays were different altogether. He considered that the success of the treatment was due to the fact that the majority of goîtres were adenomatous goîtres and they were dealing with a gland which was composed of somewhat embryonic cells. If iodine treatment were used for ten to fourteen days, the number of mitotic cells was increased enormously and then fell and this was the period for X ray treatment.

DR. MERVYN PATTERSON inquired about the geographical distribution and said that he had found a small focus of goître among school children at Hatton Vale.

DR. ALLAN LEE congratulated Dr. Clarke on his results and agreed with Dr. Macdonald as to the better results in surgery when surgeons had more chances of becoming expert.

DR. E. S. MEYERS congratulated Dr. Clarke. He referred to Crile's work and questioned whether the effect of X rays was brought about through the sympathetic and the adrenals. He wanted to know where they stood with regard to the basal metabolic rate

DR. A. J. REYE thanked Dr. Clarke for his paper and asked how many patients had septic foci.

DR. DONALD CAMERON said that he did not operate on a patient with exophthalmic goître without getting a physician's opinion. He had found Lugol's solution very successful in tiding the patient over the operation. Also he found that operation on patients that had had deep X ray therapy were not the pleasantest. He always used a general anæsthetic and the only fatality he had had was that of a patient who had had several treatments with X rays.

DR. ALEX MURPHY raised the question of the difference between exophthalmic goître and toxic adenoma.

DR. EUSTACE RUSSELL congratulated Dr. Clarke and said he was interested in the work. He considered shock in the question of ætiology and spoke of the value of iodine treatment; he thought that there was no necessity to push Lugol's solution to large doses, but that smaller doses were quite sufficient. He was of the opinion that potassium iodide or sodium iodide was almost as useful as iodine. Dr. Russell considered rest in bed was the most important of all treatment and thought that three months' rest was necessary before any work was started.

Dr. Clarke in reply said that he had made no attempt in his paper to compare the results of surgery with those of the radiation treatment of hyperthyreoidism. The earliest patients of this series had been refused surgical operation and they had been given X ray treatment purely for an experiment. The response was so good that he had decided to continue the line of treatment further.

Twelve of the patients in the series came from the Downs, six of them actually lived in Toowoomba.

He stated emphatically that he had discarded the so-called medium X rays for deep X ray treatment. By deep X ray treatment he meant X rays generated at about 200,000 volts. He thought that the medium X ray therapy did not give anything like the same results and in fact was one of those methods that had previously brought X ray treatment of goître into disrepute.

Whether hyperthyreoidism was caused by insufficient or excessive use of iodine, he was not prepared to state. He thought this was a matter for the pathologist and biochemist to investigate. In none of this series had any histological examination of the thyreoid gland been carried out, so he was unable to state definitely whether he was dealing with an exophthalmic goître or a toxic adenoma.

To him a useful guide for clinical purposes was the history. A tumour in the neck which subsequently gave rise to symptoms of toxic absorption, he thought was most probably a toxic adenoma.

The younger the patient the bigger was the risk and some of the failures had occurred amongst the young patients, namely those under the age of twenty-five. These failures had all occurred amongst the early patients treated by X rays and he thought that a better technique might avoid this in future.

He did not consider that radiation treatment was more dangerous than surgery. When one considered the advanced state of some of the patients with hyperthyreoidism, when they reported for treatment and also the fact that quite a number had already been refused surgical treatment, he thought that the radiation treatment was comparatively safe.

It was stated that the result was uncertain. But, on the other hand, the result was uncertain in the treatment of any other type of illness on certain occasions. Beyond the preliminary week or ten days of Lugol's solution he preferred not to use iodine any further.

The Röntgen sickness which occasionally followed immediately upon exposure to X rays in some cases, was very severe and caused the physician and the friends a good deal of anxiety, but by adapting dosage and improv-

ing the technique Röntgen sickness was not nearly so severe, nor so frequent as in the earlier period of the work.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal North Shore Hospital, St. Leonards, on August 9, 1928. The meeting took the form of a series of demonstrations by the members of the honorary staff.

Chorea.

DR. F. GUY GRIFFITHS showed a female patient, aged fifteen years, who was suffering from typical chorea. She had been treated as an in-door patient at the Royal North Shore Hospital in 1926. The chorea on that occasion had become manifest during a period of intense study for examinations. There was no history of "rheumatism," but mitral disease had been present. The patient had been treated by chloral hydrate, bromide of potash and methylsulphonal. Recovery had occurred in three months.

The present illness had begun gradually during overwork at home. The movements were typical of chorea—they were irregular, jerky and purposeless and affected the hands and arms so that the patient was unable to feed herself. Facial grimaces were ceaseless while the patient was awake and interfered with her speech. She was being treated by bromides, salicylates, phenobarbital and arsenic.

Recurrent Hæmaturia.

Dr. Griffiths also showed a boy, aged ten years, who was suffering from hæmaturia which had been manifest occasionally for one month prior to admission on May 15, 1928. Neither pain nor fever was present and there was no history of injury. The patient had been severely burned sixteen months previously and had suffered from enteric fever in the previous twelve months. At the time of admission the urine had been acid, with a specific gravity of 1,012; it had contained neither albumin nor blood. Microscopical examination had revealed the presence of many red blood corpuscles and a few leucocytes. Neither casts nor bacteria had been present. No sign of renal calculus had been found on X ray examination of the kidney and no abnormality had been discovered on cystoscopic examination. A hypodermic injection of 0·0005 cubic centimetre of tuberculin had been given, but no reaction had occurred. When a dose of 0·0025 cubic centimetre was given, urticaria had resulted, but it was thought that this was probably due to diphtheria antitoxin which had been given, because Klebs-Löffler bacilli were found in the throat. A typical reaction had followed the subsequent injection of 0·0025 cubic centimetre of tuberculin. Since that time increasing doses of tuberculin had been given and the patient was doing well.

Pneumonokoniosis.

Dr. Griffiths's third patient was a man, forty-one years of age, who had worked underground as a miner for sixteen years at Broken Hill. The patient had complained of pains across the chest and of cough with very thick tough yellow sputum. Dark particles had been present in the sputum, but no tubercle bacilli had been found. Pulmonary expansion was deficient, bronchial breathing was present at the right apex and doubtful signs were present at the left apex. X ray examination revealed extensive mottling in both lungs. Pain was more pronounced on the left side. The perihylar shadows were increased and there was some thickening towards both bases which in the radiographer's opinion suggested pulmonary tuberculosis rather than pneumonokoniosis.

Equalization of Lower Extremities.

DR. S. H. SCOUGALL showed two patients on whom he had carried out operations for the equalization of the lower limbs. He pointed out that equalization of the lower limbs might be effected either by shortening of the long limb or elongating the short limb; the latter operation had more limitation than the former. As a result of three operations for shortening and two for elongation, performed in the previous three months, it appeared to Dr. Scougall that there was considerably greater technical difficulty in securing the elongation, greater risk and more discomfort to the patient. Since the end result in either case was a matter of height of patient and not of function, the shortening seemed the more applicable measure, except when special indications to the contrary existed.

Dr. Scougall showed a patient whose right lower limb had been shorter than the left. In order to remedy the defect he had lengthened the right femur and shortened the left.

Another patient had acquired *talipes equino-varus* after anterior poliomyelitis. The right foot had been stabilized and the left femur shortened by 2·5 centimetres (one inch).

Claw Foot.

Dr. Scougall also showed a patient who suffered from claw foot. The patient was an adult and Dr. Scougall showed casts of the condition before and after operation. The claw foot was of severe degree and the toes so dorsiflexed that the patient had never been able to place them on the ground. The procedure adopted had been a modified Dunn operation. The chief point of interest was the position assumed by the toes and the fore part of the foot, consequent on the pronounced shortening of the foot, without local interference.

Scarlet Fever.

DR. C. W. SINCLAIR showed a patient who had suffered from scarlet fever with a blood infection and who had been treated by serum. This report will be published in a subsequent issue.

Ischæmic Paralysis of the Leg.

DR. V. M. COPPLESON showed a boy, aged ten years, who had been admitted to hospital on June 8, 1928. He had suffered from a fracture of the femur three years previously and this had been treated by Bryant Murray's method. Apparently some sloughing of the muscles of the leg had occurred and an operation of an unknown nature had been performed in another hospital. Considerable wasting of the muscles of the leg had been present, but some movement had been present in the toes. On June 13, 1928, tenotomy of the right *tendo Achillis* and of the *tibialis posterior* had been performed.

Suppurating Hydatid of the Lung Treated by Artificial Pneumothorax.

DR. W. COTTER HARVEY showed a female patient who was being treated by artificial pneumothorax for a suppurating hydatid of the lung. He said that he hoped to report the case in full at a later date when healing by granulation was established.

Alopecia.

DR. GEORGE R. HAMILTON showed a patient who was suffering from alopecia. The hair at the occipital area had a moth-eaten appearance and there was partial loss of hair of the outer half of the eyegrows. The response to the Wassermann test was "+++."

Ulcer of the Leg.

Dr. Hamilton's second patient was a butcher, aged fifty eight years, who had suffered from extensive ulceration of the leg for fifteen years. No local treatment had been of any avail and the patient had refused amputation.

Frontal Sinusitis.

DR. E. P. BLASHKI showed a female patient, aged twenty-seven years, who had been admitted to hospital on January 19, 1928. He said that he was showing the patient in order to demonstrate the result of Douglas Harmer's frontal sinus operation. The patient had suffered from headaches and nasal discharge for twelve years. During this time the patient had had periods of freedom from symptoms, but the freedom had been incomplete. In August, 1925, a small polypus had been removed from the right side under the middle turbinal bone. On December 12, 1927, portion of the middle turbinal bone had been removed and this had given some, but not complete relief. On admission the patient had been subjected to Douglas Harmer's frontal sinus operation. The patient's stay in hospital had been six days and treat-

ment in the out-patient department had lasted another five weeks. Recovery was complete and the patient complained of no symptoms whatever.

Dr. Blashki pointed out that in the operation devised by Douglas Harmer an incision was made in the region of the eyebrow, care being taken to avoid the supra-orbital nerve. After retraction of tissues a small hole was made in the anterior wall of the frontal sinus low down and near the middle line. This allowed inspection of the interior of the sinus. A flexible probe was then passed down into the nose and after some silk was attached to its tip, it was withdrawn, the silk being led through into the frontal wound. The lower end of the silk was then attached to a small rubber catheter. The size used was the largest that could be drawn up, but this was generally small. By traction on the silk the catheter was drawn upward until its tip arrived in the frontal sinus. The forehead wound was then closed and the silk was attached to the forehead by means of sticking plaster. The lower end of the catheter was cut off. After treatment consisted in cleansing the nose by douches *et cetera* and changing the catheter for a larger one from time to time, usually about once a week. This led to gradual dilatation of the frontal-nasal duct so that it would admit a number 9 English catheter. When the catheter was changed, a fresh piece of silk was tied on to the string projecting from the forehead and on withdrawal of the catheter this followed. The old catheter was cut off and the new one was attached and led into place in a manner similar to that used for the first.

Ataxic Paraplegia.

DR. H. C. MCDOUALL showed a male patient who was suffering from ataxic paraplegia. The patient gave a history of progressive ataxia and paraplegia for thirteen years. The condition fluctuated. The patient's muscular strength was moderately good, but he was not capable of sustained effort. He denied syphilitic infection and the family history was clear. The patient had had enteric fever thirty years previously and had suffered from gonorrhœa on three occasions. On physical examination the pupils were seen to react normally. There was no tremor of the tongue or speech defect. No muscle atrophy was present. The legs were spastic. The tendon reflexes of the arms and legs were exaggerated. Patellar clonus was present. The plantar reflexes were flexor in type. The abdominal reflexes were weak. The cremesteric reflex was absent. Sensation was unimpaired and sense of position was good. No Rombergism was present. Both the blood and the cerebro-spinal fluid had been subjected to the Wassermann test on several occasions and no reaction had been obtained.

Traumatic Neurasthenia.

Dr. McDouall's second patient was a woman, aged fifty-four years, who had been admitted to hospital on February 14, 1928, with a history of having been struck by a motor car and rendered unconscious. On examination the patient had appeared to be a perfectly healthy person, but it had been found that she was suffering from a fractured fibula and loss of memory with contusions to the right eye. She had been discharged, "cured," on April 5, 1928, and had been sent to the Walker Convalescent Hospital where she had remained for three weeks. She had again attended the Royal North Shore Hospital on May 21 and had stated that she had been suffering from headache in the right occipital region, from insomnia and from impairment of vision since the accident. On May 25 she had appeared again and had stated that she was no better and that the headaches seemed to be worse. By May 30 she had improved a little and had been seen by the Honorary Ophthalmic Surgeon who was able to find nothing calling for treatment of the eye. Since then she had been very worried about her eye and about her headaches and had obtained some relief from "Luminal." She had been seen by Dr. Cyril Shepherd on June 18, 1928, and he had reported that no deviation of the eye could be detected by inspection, but that investigation of the double image revealed separation when the patient looked downwards to the left, with tilting of the image of the right eye. In his opinion there appeared to be a very slight paresis of the superior oblique muscle on the right side. An X ray examination of the skull, made on February 22, 1928, had revealed no fracture. The patient was being treated by bromide and salicylate of soda, "Dial" and "Luminal."

Myxœdema and Neurasthenia.

Dr. McDouall's third patient was suffering from neurasthenia and myxœdema. She was a married woman, aged fifty-two years, who had first attended hospital on April 2, 1925, complaining of pain in the back, shortness of breath on walking and dry useless irritating cough. She had been stout and pallid. She had been referred to the orthopædic department on account of fibrositis in order that she might have treatment by hot air. From February 18, 1926, until August 23, 1927, nothing had been heard of the patient. On the latter date she had been admitted in a semi-conscious condition. She had been very quiet for two days prior to admission and on admission had been resistive, suspicious and depressed. A catheter had been passed and 240 cubic centimetres (twelve fluid ounces) of urine containing a slight quantity of albumin and a few granular casts, had been drawn off. During her stay she had complained that the nurses had "a set" on her and were talking about her and that the sooner she was out of the place, the better. The urea content of the blood at that time had been 49.4 milligrammes per hundred cubic centimetres. The patient had been discharged with a diagnosis of melancholia on September 7, 1927, and had been advised to go for a holiday.

On April 4, 1928, it had been noticed that the patient's face was much grosser than normal. On May 16, 1928, her face had been smaller, of a better colour and although her general condition was improving, she had been constipated. On June 13, 1928, it had been noted that she was continuing to improve in spirits and she had a general sense of well-being, but complained of a very bad breath. Since then she had been seen at intervals of a fortnight and continued to improve. She was being treated by thyreoid extract, stomachic drugs and bromide of ammonia.

Leontiasis Ossia.

DR. HUNTER JAMIESON showed a patient, aged forty-eight years, who was suffering from *leontiasis ossia*. The patient had first noticed swelling of the jaw twenty years previously after tooth extraction. The increase in size had been gradual and not painful. The patient's general health was good and the previous history contained nothing of importance. The X ray appearances were typical of *leontiasis ossia*.

Fractured Skull with Persistent Traumatic Œdema.

DR. E. M. HUMPHERY showed a patient, aged four years, who had been admitted on February 8, 1928, with a history of having been knocked down by a motor car that day. On admission the patient had been semi-conscious. He had had several wounds of the face, a fracture of the right side of the mandible and a dislocation of the left acromio-clavicular joint. There had been a swelling on the right side of the face, especially in the region of the parotid gland and right eyelid. Definite ptosis of the right eye had been present as well as paralysis of the right sixth cranial nerve, which was probably due to a fracture of the base of the skull near the petrous bone or in the orbit.

Two months after admission the swelling of the right upper eyelid was still pronounced and increased on exertion. A bruit could be heard over this area and the presence of an arterio-venous aneurysm was suspected. With expectant treatment the swelling had greatly diminished and the proptosis and paralysis of the sixth nerve had greatly improved.

Subacute Combined Degeneration of the Spinal Cord.

DR. W. WILSON INGRAM showed a male patient, aged sixty-five years, a retired railway officer, who had been admitted on May 10, 1928. He had given a history of

tingling in the fingers for twelve months. He had begun to lose the use of his legs three months previously. He had complained of breathlessness on exertion. A blood count made before his admission had revealed the fact that he was suffering from pernicious anæmia.

On the patient's admission his cranial nerves had been intact. The knee jerk had been absent on the left side and just present on the right. The plantar reflexes had been flexor in type. Anæsthesia of the stocking and glove type had been present in the hands and feet and there had been a loss of sense of passive position and passive movements in the fingers and toes. He had been very ataxic. The blood count had been as follows:

Erythrocytes, per cubic millimetre, ..	2,630,000
Hæmoglobin value	48%
Colour index	0·9
Leucocytes, per cubic millimetre	5,000

The leucocytes had been present in normal proportion. The erythrocytes had manifested considerable irregularity in size, shape and staining. Several macrocytes had been seen, but no normoblasts. A test meal had revealed achlorhydria. Streptococci and pus cells had been found in the gastric juice. The patient was being treated with liver extract, liver and hydrochloric acid. At the time of the meeting his blood count was:

Erythrocytes, per cubic millimetre ..	5,000,000
Hæmoglobin value	80%
Leucocytes, per cubic millimetre	7,500

The film picture was normal.

The knee jerks were exaggerated, the plantar reflex was still extensor in type. He had lost sensation to pin prick in the tips of all the fingers of the right hand as far as the first phalanx and also in the first and second fingers of the left hand. He was still ataxic and still had loss of sense of passive position.

Cerebral Abscess with Uncinate Fits.

Dr. Ingram also showed a male patient who was suffering from cerebral abscess with fits of the uncinate type. It is hoped to report this case in a subsequent issue.

Multiple Granulomata.

Dr. Ingram's third patient was a woman, aged forty-four years, who was suffering from multiple granulomata of the legs. There was nothing of note in her previous history. Her mother and father had died at the ages of sixty-eight and seventy years respectively. Seven sisters and one brother were alive and healthy. Four years previously the patient had noticed a stinging pain in the right ankle and a day or two later had noticed a small lump about the size of a shot under the skin. Every few days the same thing had occurred and each time a fresh lump had appeared. These lumps had gone on increasing in size and number, though they were not preceded by the stinging pain. At the time of the meeting the patient had numerous small tumours in both legs, both on the external and internal aspects and extending from ankles to knees. There were a few small scattered nodules in the thighs. There was no anæsthesia in the limbs. On July 4, 1928, a nodule had been removed from the middle of the right leg and the pathological report was to the effect that sections showed the growth to be composed of granulomatous tissue with typical giant cell systems containing epithelioid cells, lymphocytes and numerous large giant cells of the Langhans type. No acid fast bacilli had been seen in smears. The opinion had been expressed that the lesion was granulomatous. The serum had not reacted to the Wassermann test or to tuberculin tests.

Pathological Specimens.

Dr. Ingram also showed a series of interesting pathological specimens. One specimen was that of a liver with multiple abscesses from a case of suppurative pyelophlebitis following appendicectomy. In another liver taken from a woman who had been admitted in labour and had died from eclampsia, there were seen multiple hæmorrhages and fatty degeneration. A tibia taken from a patient who died of pernicious anæmia, contained dark red marrow in three quarters of its length. The medullary cavity had increased at the expense of the compact bone. Other specimens included encephaloid cancer of the uterus, portal cirrhosis, adeno-carcinoma of the stomach and malignant endocarditis.

Urology.

DR. R. J. SILVERTON showed a series of urological specimens and pyelograms. He also gave a demonstration of the technique of cystoscopy and explained the findings in several patients.

Skiagrams.

DR. H. R. SEAR, DR. W. B. DIGHT and DR. K. VICKERY showed a series of interesting skiagrams.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Goulston, Eric Hyman, M.B., B.S., 1928 (Univ. Sydney), 9, Billyard Avenue, Elizabeth Bay, Sydney.
Mallam, Harry Roger, M.B., Ch.M., 1926 (Univ. Sydney), Highbury, Armidale.
Steel, Robert Stanley, M.B., Ch.M., 1923 (Univ. Sydney), "Glenstrae," Tryon Road, Lindfield.
Whitehead, Hebden Hoffman, M.B., B.S., 1920 (Univ. Melbourne), Deniliquin.

Obituary.

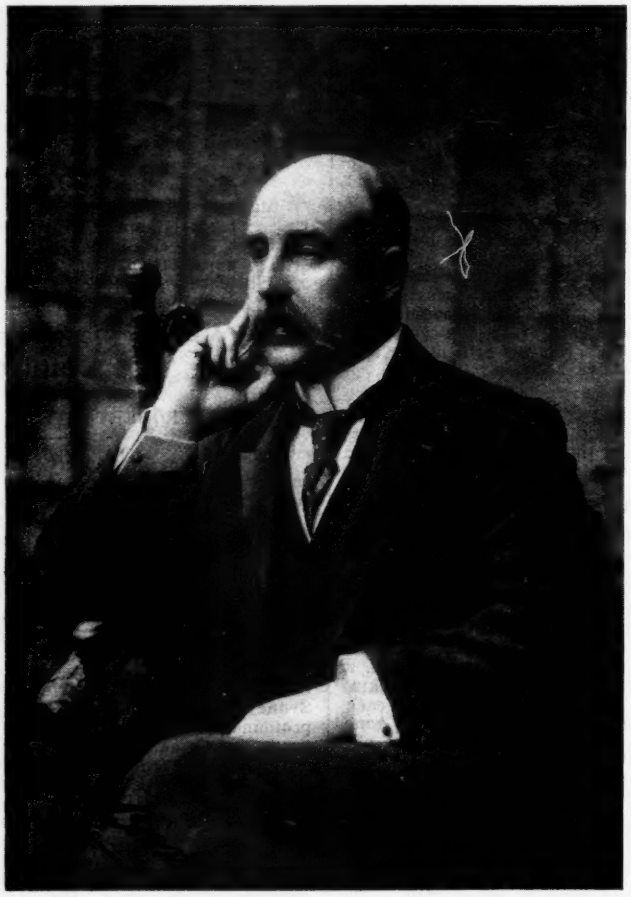
ROBERT STEER BOWKER.

THE passing of Robert Steer Bowker which was announced in a recent issue of this journal, has removed one who was privileged to take an active part in the development of surgery in New South Wales in the early years of this century, one whose name is closely bound up with the progress of Sydney Hospital, who took a pride in its good name and who worked for it for many years, and one who moulded the surgical technique of many graduates of the University of Sydney.

Robert Steer Bowker was born in the atmosphere of medicine. He was the eldest son of the late Robert Bowker, widely known and respected as a medical practitioner, first of all at Newcastle and subsequently at Sydney. The influence of the father on the family was profound. Robert who was born at Newcastle sixty-seven years ago, studied medicine and three of his brothers followed his example; another became a dental surgeon and the remaining brother a veterinary surgeon. Robert was sent to school first of all to Holt's School and afterwards to Sydney Grammar School. He went to England to study medicine after having matriculated at the University of Sydney. He became a student at Middlesex Hospital Medical School. He took an interest in all the activities of his school. He played cricket for his hospital and represented the combined London hospitals. He was a good medium slow bowler. In later life he enjoyed a game of cricket and took an active part in the inter-hospital cricket matches, now unhappily discontinued. In 1883 he qualified and was admitted a licentiate of the Royal College of Physicians of Edinburgh and a member of the Royal College of Surgeons of England. Upon graduation he returned to Australia and went into practice with his father. At first he turned his attention to ophthalmology, but found that he had no real liking for this branch of medicine. He then took up general surgery and found that for which he was best suited.

On May 2, 1893, he began a long and honourable association with Sydney Hospital; on that day he was appointed Honorary Assistant Surgeon. Three years later he became full surgeon. He served the hospital

until February 15, 1921, when he retired on account of having reached the age limit of sixty years. He had the honour before retirement of occupying the position of Senior Surgeon. As a surgeon Bowker worked on sound principles. He preferred the well tried methods which he knew were safe, to the newer ways which were vaunted as superior, but not proven. He did not at first take kindly to the use of rubber gloves, but recognizing their value he soon ceased to fear "the hand of iron in the glove of rubber." He was quick, but withal careful. He handled his instruments with dexterity. He did not forget that he was operating on a human being. As a teacher he was at his best while operating. He liked to explain the steps of his operation to his house surgeon or to those standing by. He was quick to recognize merit and intolerant of stupidity. At the same time he seldom gave praise, but when he did, it was given generously. When he apportioned blame, he could be crushing, not with sarcasm, but with straight plain language. For many years he operated on Thursday afternoon in the same large operating theatre and at the same time as his friend the late Herbert Maitland. These afternoons were a delight to visitors, for they always saw something instructive and occasionally something brilliant. Discussion was keen and useful and in the surgeons' room many a good story was told over afternoon tea. These afternoons were, however, often anything but a delight to the resident and nursing staff. It is not a simple matter to see that there is no hitch in the advent of patients, the preparation of instruments and the evenness of anæsthesia when two alert surgeons are working against each other in friendly rivalry. The senior resident medical officer in charge of the theatre was the most worried man on these occasions. Great regret was expressed at Bowker's retirement from the honorary staff in 1921. He was appointed to the consulting staff at this time and was later able to serve the institution in another capacity for he became a member of the Board and of the House Committee of the Board in 1922. He continued to act in these capacities until his death.



Bowker was not content to vegitate. He twice travelled abroad in an endeavour to widen his outlook. After his second trip he read a paper before the University of Sydney Medical Society which shows that he was not idle while he was away and that he made copious notes of the methods of the various surgeons whom he saw at work. His contributions to medical literature though not numerous show evidence of clear thinking. In 1905 he read a paper before the Australasian Medical Congress in Adelaide. He chose as his subject appendicitis and laid emphasis on "waiting" on the doctor's part, neglect on the patient's part or occasional unavoidable error in diagnosis as the sole cause of death. Another publication dealt with the operative treatment of inguinal hernia, an operation which he was fond of performing, and which he carried out with consummate skill. In 1918 he published in this journal a series of clinical remarks made to students in the operating theatre.

Bowker had many interests outside his profession. He was a good shot with a gun. He was formerly a prominent member of the Sydney Gun Club. Latterly he became interested in his motor boat and spent many hours cruising in the harbour. He was a member of the Australian Jockey Club and took a keen interest in racing.

He is survived by a widow, three daughters and a son who is a medical student. To them and to his five brothers the sympathy of the medical profession is extended. Their sorrow may be tempered by the knowledge that Robert Steer Bowker played a man's part and contributed his share to progress in the art and practice of surgery and that he did what he could to mitigate the sufferings of many.

Special Correspondence.

LONDON LETTER.

BY OUR SPECIAL CORRESPONDENT.

Vaccination.

THE Ministry of Health recently appointed a committee of inquiry to report on matters relating to vaccine lymph and to discuss the methods of diminishing the risks of vaccination. It must be admitted that the situation in England with regard to vaccination cannot be considered satisfactory by those who are of the opinion that vaccination and revaccination are the main factors in the prevention of small pox. Vaccination has never been a compulsory measure in this country, but even so fines and in some cases a term of imprisonment have been inflicted on obdurate parents. In 1898 a bill was passed which permitted a parent to obtain exemption from vaccination for a child by making before a justice of the peace or a commissioner for oaths a statutory declaration that he has a "conscientious objection" to vaccination. Greater facilities for obtaining exemption were given in 1907 and the result may be seen from the following figures:

1899: 66·4% primarily vaccinated: 3·6% legally exempted.
1922: 40·3% primarily vaccinated: 40·5% legally exempted.

Owing to the war, when they were compulsorily vaccinated, a large number of male adults are protected at the present time, but female adults and children are greatly unprotected. It is of interest to compare the

incidence of small pox in England with that in European countries in order to see the result of the increased "exemption" facilities.

In Sweden there have been no cases for two years, in Norway one case in five years, in Denmark no cases in the five years 1919-1923. The precautions were relaxed in Germany during the war and in 1919 there were 5,012 cases; since that date the numbers have been steadily reduced: 2,042 in 1920, 688 in 1921, 215 in 1922 and 17 in 1923. In sad contrast with these figures is England's record of cases. There were seven cases in 1917, 63 in 1918, 311 in 1919 and from then a sharp rise each year until in 1925 there were 5,365 cases, 4,132 occurring in unvaccinated persons. According to the Health Committee of the League of Nations in 1926, 90% of the small pox in Europe (including Spain and Russia) occurred in England! This is a pretty state of things for Jenner's country! It is fortunate that in most cases the disease is of a mild type, though in 1927 when a severe form appeared, five persons died out of eleven attacked by the disease.

The Ministry of Health confess that there is a lack of information as to the nominal dose of lymph which is capable of giving immunity for five or six years, but they recommend that one insertion should be given instead of the four hitherto considered suitable and they also suggest that the vaccination should be done between the second and sixth month and that revaccination should be offered on entering and leaving school. The Committee considers that there is some connexion between vaccination and the incidence of encephalitis, but adds that the latter does not occur in infants as the result of primary vaccination. The report is a long one, but is hardly of any real help to those who are anxious to extend their knowledge of the value of vaccination and revaccination as prophylactic measures against small pox.

Wellcome Museum of Medical Science.

A few weeks ago a short description was given in these columns of the Wellcome Museum of Medical Science, of which the address was stated to be 25-28, Endsleigh Gardens, Gordon Square, W.C. 1. Since that paragraph was written the names and numbers of the streets in that district have been changed and the Wellcome Museum of Medical Science is now situated at Endsleigh House, 33, Gordon Street, W.C. 1. A series of demonstrations has been arranged to take place at the museum this autumn and, though the following list of lecturers and their subjects is published too late to be of use, it will give some idea of the wide range of the Museum and its possibilities for post-graduate study.

Dr. S. H. Daukes: "A Synoptical Museum of Medicine: Its Value for Post-Graduate Study." "The Transmission of Helminthic Diseases." "Diet and Disease."

Dr. Donald Hunter: "Portals of Entry in Tuberculosis." "Morbid Anatomy and Some Clinical Aspects."

Dr. G. Carmichael Low: "Recent Work on Blood Diseases."

Colonel L. W. Harrison: "Syphilis Now and Twenty Years Ago."

Dr. E. G. Ffrench: "The Ætiology of Various Skin Diseases."

Dr. Philip Manson Bahr: "Prevention and Treatment of Malaria."

Mr. Herbert J. Paterson: "Cancer."

If this series proves attractive (and there is little doubt about it), further demonstrations will be arranged in January and the subsequent months. The Fellowship of Medicine, 1, Wimpole Street, London, W. 1, has organized the demonstrations at the Wellcome Museum and also arranges lectures and weekly demonstrations in surgery, in medicine and in ophthalmology at the London hospitals. All lectures and demonstrations are open to members of the medical profession without fee. The list of special courses arranged by the Fellowship of Medicine for 1929 will be published in October and copies will be sent on application.

Correspondence.

TREATMENT OF CANCER BY COLLOIDAL PREPARATIONS OF METALS.

SIR: I would like to refer to Dr. J. Leon Jona's paper on the treatment of inoperable cancer by the injection of colloidal preparations of various metals, bismuth, lead, copper, appearing in THE MEDICAL JOURNAL OF AUSTRALIA of November 10, 1928.

It is hard to have to adversely criticize a friend's writings, but I feel I must make a protest against the method in which results have been collated. Is Dr. Jona for or against his own and Dr. Blair Bell's methods of treatment? Perhaps his writing may indicate "for," his results certainly "against."

There are only three cases, the first in the list, that have observed time limit in which a cure of cancer is accepted as being cured—five years. Blair Bell himself will not give his result since treatment was inaugurated until five years have elapsed.

There have been no end results quoted in any of these three cases. Number 4 committed suicide. Numbers 5 and 6 useless to incorporate in this list, as there is no report in the result column. Number 7 evidently not followed up and no further report, so it comes under the same category as Numbers 5 and 6.

Numbers 8, 9, 10, 11, 12 all apparently gone the same way, but as there is no result of effort to find out the finish of two of these cases one word, "dead," appears in the result column of only two.

Number 13, result "well," and she had radium in January, 1927, and February, 1928, and a mass removed from abdomen and back. This is the one that makes the reader realize that a column for the pathologist's microscopic report is missing.

Numbers 14 to 21 have had three initial injections anything from two to six months ago. One of this number is beyond argument—dead. The time for any observation since first operation is ridiculous. All these cases were previously operated upon, but apparently little credit has been given to the initial surgery.

Surely it is to be deplored that such premature efforts should go out as scientific investigation and expose a futile effort to make something out of nothing.

Yours, etc.,

A. NORMAN MCARTHUR, M.B., B.S., M.R.C.S., L.R.C.P., F.A.C.S., F.C.S.A.,
Senior Gynæcologist to In-Patients, Saint Vincent's Hospital, Melbourne.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered under the provisions of *The Medical Act of* 1925, of Queensland, as duly qualified medical practitioners:

Arnold, William John, M.B., B.S., 1927 (Univ. Sydney), Innisfail.

Langford, William Ernest Edward, M.B., B.S., 1928 (Univ. Sydney), Brisbane.

Mathew, Randolph Yule, M.B., B.S., 1923 (Univ. Melbourne), Commonwealth Health Department, Rockhampton.

Shirras, Alan Fraser, M.B., Ch.B., 1926 (Univ. Glasgow), Brisbane.

Thomas, David Lewis Gordon, M.B., B.S., 1928 (Univ. Melbourne), Toowoomba.

Restorations to the Register:

Burke-Gaffney, Aylmer Edward, M.B., 1911 (Univ. Sydney), Innisfail.

Rorke, Frederick Charles, M.B., Ch.M., 1911 (Univ. Sydney), Taroom.

INDEX TO THE MEDICAL JOURNAL OF AUSTRALIA.

THE index to Volume II, 1928, of THE MEDICAL JOURNAL OF AUSTRALIA will not be included as heretofore in the last issue of the volume, but will be printed separately and will be forwarded to those members of the several Branches who intimate in writing to the Editor that they wish to receive it. The intimation should reach the office of the journal not later than December 31, 1928.

Books Received.

MODERN PROBLEMS IN NEUROLOGY, by S. A. Kinnier Wilson, M.D., B.Sc. (Edinburgh), F.R.C.P.; 1928. London: Edward Arnold and Company. Royal 8vo., pp. 370, with illustrations. Price: 21s. net.

INSOMNIA AND DRUG ADDICTION, by P. C. Collingwood Fenwick; 1928. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 68. Price: 2s. net.

Diary for the Month.

DEC. 4.—Tasmanian Branch, B.M.A.: Council.
DEC. 4.—New South Wales Branch, B.M.A.: Ethics Committee.
DEC. 5.—Victorian Branch, B.M.A.: Branch (Annual Meeting).
DEC. 5.—South Sydney Medical Association, New South Wales.
DEC. 5.—Western Medical Association, New South Wales.
DEC. 6.—New South Wales Branch, B.M.A.: Branch.
DEC. 8.—Eastern District Medical Association, New South Wales.
DEC. 11.—Tasmanian Branch, B.M.A.: Branch.
DEC. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments.

Dr. Thomas Acton (B.M.A.) has been appointed Government Medical Officer at Woodburn, New South Wales.

* * *

Dr. Cecil Hugh Norton (B.M.A.) has been appointed Government Medical Officer at Holbrook, New South Wales.

* * *

Dr. Herbert Locksley St. Vincent Welch (B.M.A.) has been appointed Government Medical Officer at Wyong, New South Wales.

* * *

Dr. William Alexander H. Birrell (B.M.A.) has been appointed Certifying Medical Practitioner at Cheltenham, Victoria, pursuant to the provisions of the *Workers' Compensation Acts*.

* * *

Dr. Frank Winfield Williams (B.M.A.) has been appointed Certifying Medical Practitioner at Stawell, Victoria, pursuant to the provisions of the *Workers' Compensation Acts*.

* * *

Dr. E. J. T. Thompson (B.M.A.), has been appointed Acting Inspector-General of the Insane, Acting Medical Superintendent of (a) Claremont Hospital for the Insane, (b) Green Place Hospital for the Insane, (c) Whitby Falls Hospital for the Insane, (d) "Lemnos" Soldiers Mental Hospital and Acting Inspector-General of the Institution for Inebriates, Western Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii.

BALMAIN AND DISTRICT HOSPITAL: Medical Vacancies.
LAUNCESTON PUBLIC HOSPITAL: Junior Resident Medical Officer.
MANLY COTTAGE HOSPITAL, NEW SOUTH WALES: Resident Medical Officer.
MARRICKVILLE DISTRICT HOSPITAL: Resident Medical Superintendent.
ROYAL NORTH SHORE HOSPITAL OF SYDNEY: Honorary Assistant Surgeon to Diseases of the Ear, Nose and Throat.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. Marrickville United Friendly Societies' Dispensary. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Booleroo Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to position at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance